DOMESTIC ENGINEERING

PLUMBING & HEATING CONTRACTING AND MERCHANDISING

imming Pools

ader Inquiries Show Active Interest

tomatic Heat and Air Conditioning Section—Page 53

March 1933

"Can't you do something about it?

"... *Really it should be called a* 'Blush' Valve!"

yes . . . Plumbers, you can at last do something to eliminate the embarrassment and nerve jitters caused by noisy flush valves. • Now you can silence the criticism which has been leveled against you because you could not stop those objectionable noises from forming.

THE NEW SPEAKMAN SI-FLO FLUSH VALVE CANNOT BE HEARD OUTSIDE THE BATHROOM. THERE ARE NO LINE HISSES—NO "BUMP" WHEN THE VALVE SEATS—*IT'S AS SILENT AS A CAT ON A PILLOW.*

IN addition to *silence* the Speakman SI-FLO Flush Valve has all the fine features which you would expect in a product bearing the Speakman name. Velocity and volume of water can be easily controlled. The piston unit is made entirely of non-corrosive materials. It will last for years, and can be replaced at a cost to the owner of about $1.50!

Here is *the* flush valve for replacement—for new installations. It has been tested—tried out—under all possible conditions in various parts of the country—hard and soft water, muddy water, and now it is ready to help you answer the question of "what can be done?".

House owners want it; apartment managers will welcome it, and we are also telling schools, colleges, hospitals, and hotels that the last objection to the flush valve—*noise*—has been removed.

SPEAKMAN COMPANY
Wilmington Delaware

K-1001—SPEAKMAN Chromium Plated Si-Flo Closet Flush Valve with 1" capped angle stop for right or left inlet, wall flange, metal oscillating handle, flush connection, spud coupling nut and flange for 1½" top supply.

Go after these markets

Don't wait for them to ask you. Call them on the telephone—make personal calls—tell them that you can eliminate noises with the Speakman Si-Flo Flush Valve. Send them literature with your invoices and letters. We'll supply it imprinted with your name and address.

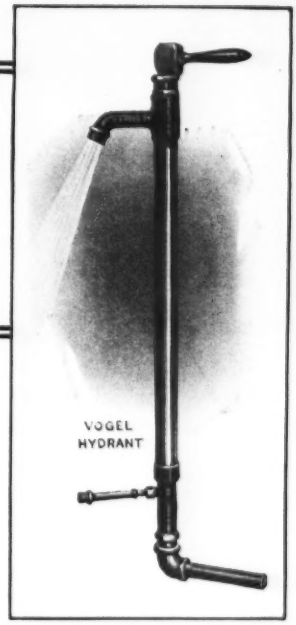
Do this—And to give you an idea of the tremendous market for flush valves—it is estimated that 19,000 flush valves will be replaced in hospitals alone in 1933.

IT ELIMINATES THE NOISE THAT ANNOYS!

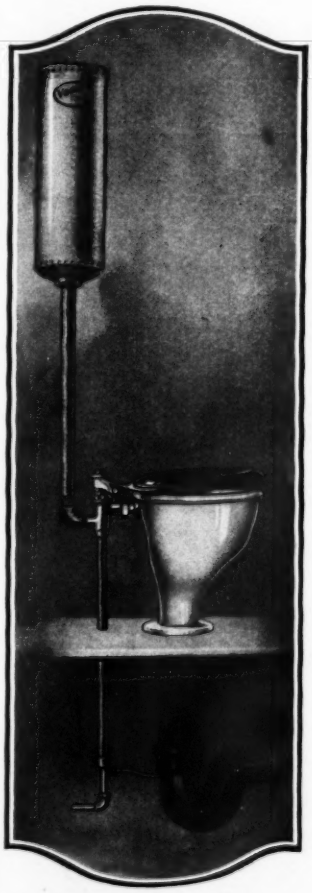
SPEAKMAN *Showers and Fixtures*

Inaugurate a season of profit . . .

Start now by sending Vogel folders and blotters to your list of customers



VOGEL FROST-PROOF HYDRANT



NUMBER ONE VOGEL FROST-PROOF CLOSET
Simple in operation. Sturdy in construction. Half a million in operation.

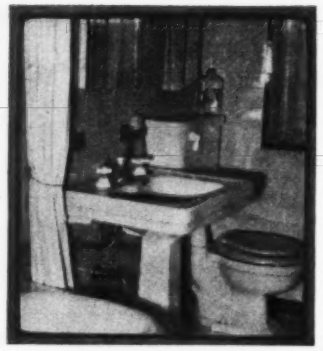
WE'VE had plenty of cold weather this year, and people now realize the convenience of having a closet or hydrant that can never freeze, no matter how low the temperature — *And That Means A Vogel.*

VOGEL folders and blotters are supplied free — imprinted with your name, address and telephone number. Let us know how many you need — then send them out — they bring in business that pays a good profit.

JOSEPH A. VOGEL COMPANY
Wilmington, Del. St. Louis, Mo.

• VOGEL PATENTED •

Frost-Proof Products



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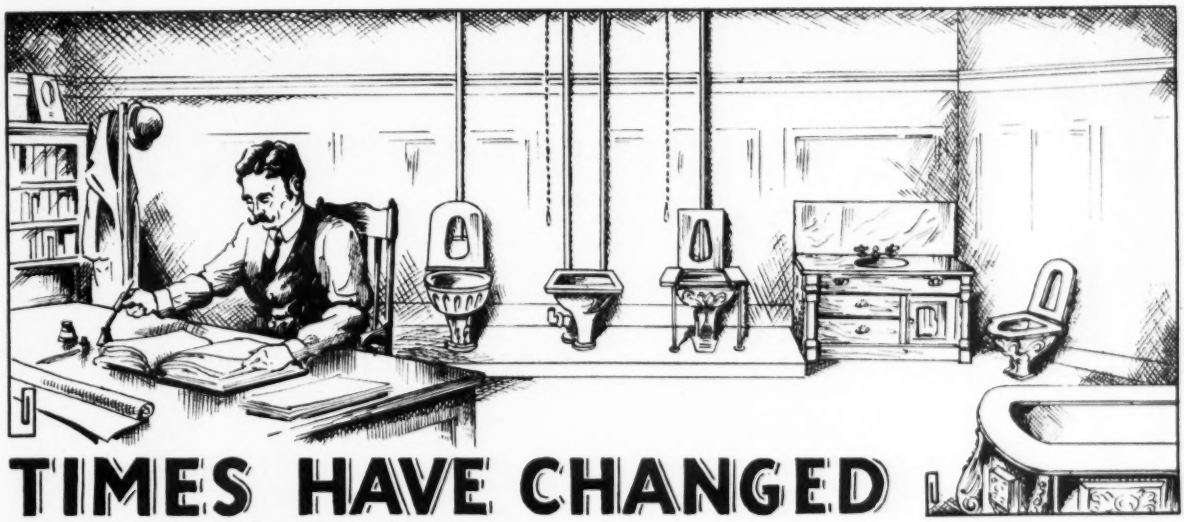


TIMES HAVE CHANGED SINCE THEN—

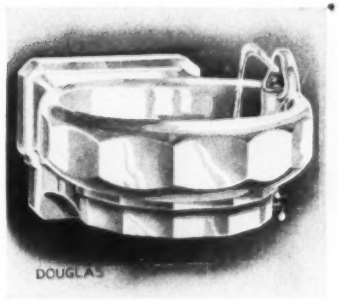
Today a glimpse into the interior of a plumbing shop of forty-five years ago would reveal an atmosphere that would result in many a smile and joke. The ornate bowls and bathtubs with their fancy colored scrolls and borders would bring considerable comment.

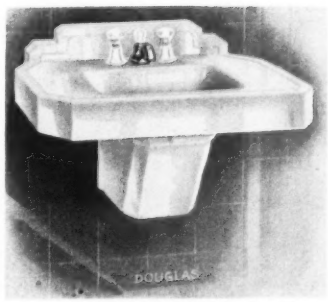
The forward advance over these forty-five years in the plumbing industry has been an outstanding record of achievement. Style, designs and policies for the most part have been swept into discard.

But outstanding in this period is one achievement that has weathered the supreme test of time . . . The John Douglas Company sales policy, *from The John Douglas Company direct to the plumbing contractor,* with each plumbing contractor establishing his own profit to meet local conditions.

The John Douglas Company has long recognized the master plumber as the logical distributor of products of their manufacture, and do not believe in a pre-established price on plumbing fixtures which does not permit of a sizable profit to the plumber.

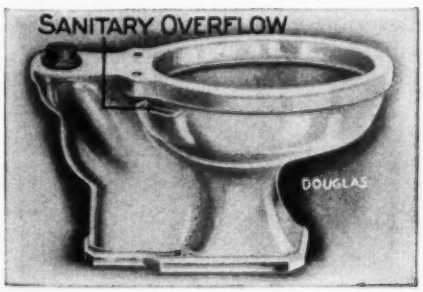
For twenty-five years The John Douglas Company has enjoyed a national reputation as specialists on government work. For the same length of time it has maintained its office, devoted exclusively to government work, at 821 Union Trust Bldg., Washington, D. C. Please feel free to write for any service or information you may require.





The JOHN DOUGLAS COMPANY, Cincinnati, Ohio

Manufacturers of Plumbing Fixtures



◆

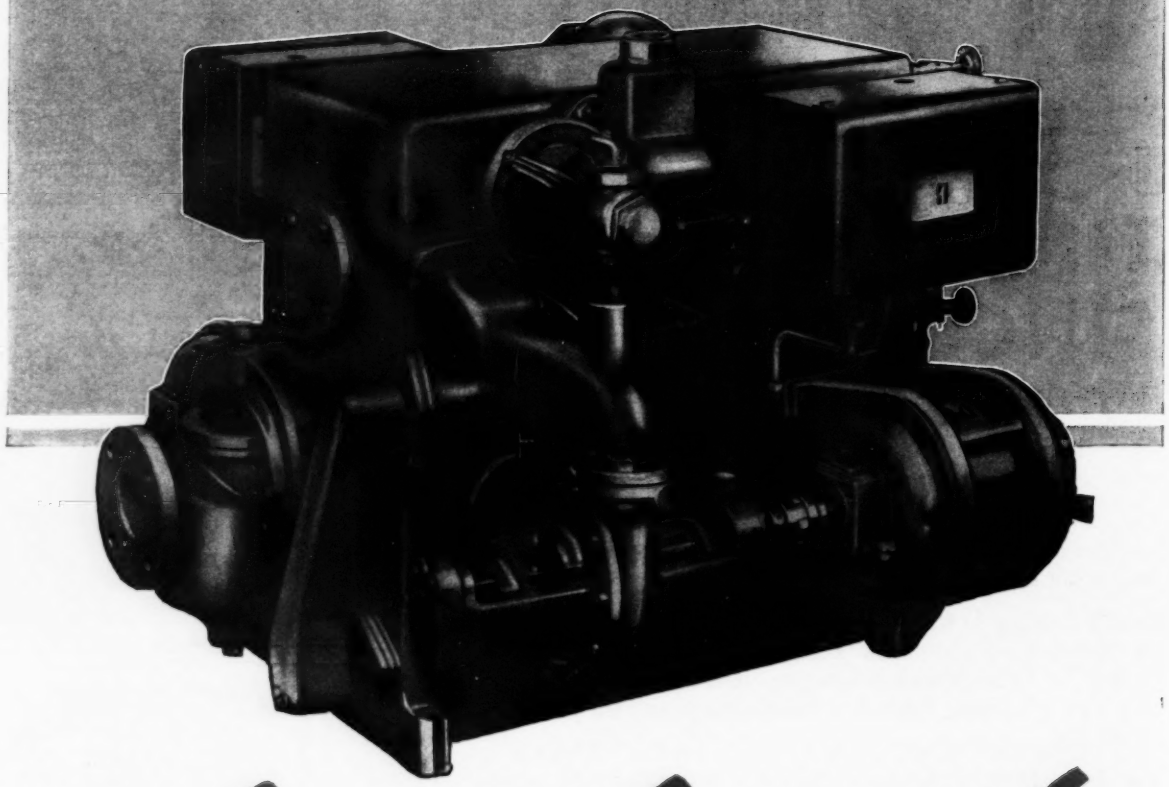
DOUGLAS BOWL WITH SANITARY OVERFLOW

Positively eliminates the possibility of back syphonage by holding the water level in the bowl below the flushing rim. :: :: ::

◆

MAIN LIBRARY A

YOU CAN *check off* THESE QUESTIONS *if you specify* HOFFMAN-ECONOMY



WILL IT MEET THE DEMANDS OF MODERN HEATING?

WILL IT DELIVER FULL RATED CAPACITY?

WILL IT OPERATE AT LOW MAINTENANCE COST?

This is why buyers of Hoffman-Economy Vacuum Pumps can check off the above vital questions with perfect assurance:

1 The improved design of Hoffman-Economy Pumps is based on close study of present heating system conditions. In other words, modern changes in heating practice have been met by corresponding changes in Hoffman-Economy construction.

2 Tests by disinterested engineers show these pumps to discharge *simultaneously* their full rated capacity of air and water . . and to deliver an excess when required.

3 Actual records of pumps on the job have established the ability of Hoffman-Economy Pumps to operate economically, *noiselessly* and without frequent service tear-downs.

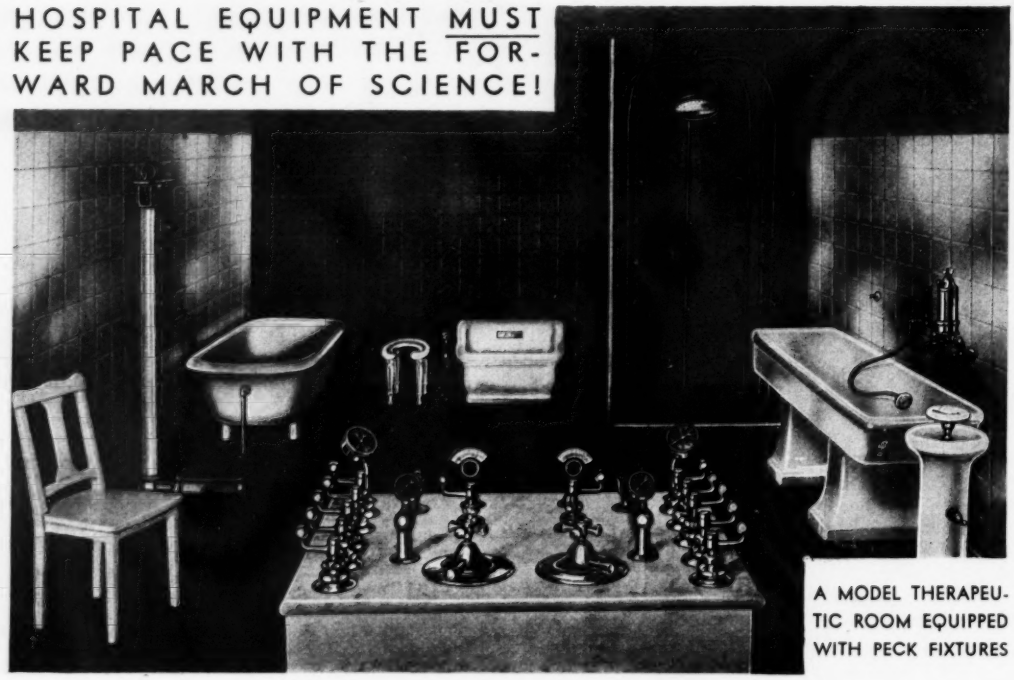
We'll rest our case on the facts . . . let us present them. New descriptive bulletins on Hoffman-Economy Vacuum and Condensation Pumps are now ready . . . write for your copies. Hoffman Specialty Co., Inc., Dept. RX-88, Waterbury, Conn.

HOFFMAN ECONOMY PUMPS

Also makers of Hoffman Venting Valves and Hoffman Controlled Heat

WATER PUMP NEWS
WEATHER: Good for pumps
MARCH, 1933
G. E. ANNOUNCES NEW PUMP MOTOR DESIGN IS OF OUTSTANDING VALUE TO DESIGNERS, MANUFACTURERS, AND DEALERS
The improved G-E Type RSA single-phase motor for pumps is now available in 1/6, 1/4, and 1/3 hp. These three ratings have absolutely interchangeable mounting dimensions for all frequencies and for d.c.
Schenectady, N. Y., March, 1933—A new pump motor of interest to all manufacturers of water pumps has been announced by the General Electric Company.
This new small motor is conservatively rated; is dependable under adverse operating conditions; and does not require frequent attention over its long operating life. Its starting, pull-up, and maximum torques are excellent. Its performance characteristics are in accordance with N.E.M.A. standards for "short annual service."
Other important features include: new drip-proof end flange with built-in terminal block which simplifies connections and eliminates necessity for splicing and soldering; greatly increased oil capacity—and many more that make this drive a real buy. The fractional horsepower motor specialist in the nearest G-E office will be glad to tell you more about this new motor, or address General Electric Company, Schenectady, N. Y.

HOSPITAL EQUIPMENT MUST KEEP PACE WITH THE FORWARD MARCH OF SCIENCE!



A MODEL THERAPEUTIC ROOM EQUIPPED WITH PECK FIXTURES

Obsolete fixtures can be replaced with Peck's

Modernize Your Local Hospitals

MEDICAL science has forged ahead so fast since the War that the replacement of hospital plumbing simply hasn't been able to keep up. In nearly every community, hospitals exist in which much of the equipment is so antiquated, so inefficient, that its use is ***costing*** instead of saving money!

Check up, and ***get,*** this business in your locality. Very little heavy selling is necessary. The Peck line of over 60 up-to-the-minute, approved hospital fixtures is so well illustrated and described in the "Hospital Section" of your catalog that a careful showing to the right man, and some persistence in following it through, should soon fetch up at the dotted line!

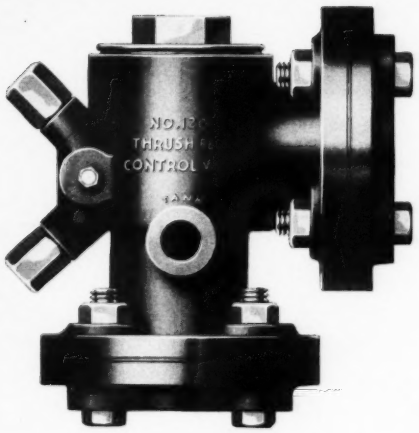
If you need data about Peck installations in prominent hospitals for "ammunition," it's yours.

THE PECK BROS. & COMPANY, NEW HAVEN, CONN.

PECK FIXTURES •

for profit

NEW!



★THRUSH FLOW CONTROL VALVE

★MAKES HOT WATER HEATING *Instantaneous!*

HERE is a new development of Thrush engineering that means *added sales and profit for you*—and greater satisfaction on the part of your customers. Now you can install a new Hot Water Heating plant or remodel an old one and provide instantaneous heating — Hot Water Heat that is quicker than steam — with a continuous supply of *really hot* Domestic Hot Water *as a by-product* at practically no cost. Send for the booklet shown at the right and learn all about this revolutionary development in Thrush Systems. We can't begin to tell you half the story in this advertisement.

Domestic Hot Water

The advantages of the new Thrush Flow Controlled Heating System are many. Not only quicker heating, not only assurance of a really dependable Domestic Hot Water supply — but *increased efficiency on the whole plant*, freedom from overheating and lowered fuel costs are also assured. You owe it to yourself to find out about this new sales building idea. *Use the coupon now and get the whole story.*

A Revolutionary Development!

MAIL THIS COUPON NOW!

H. A. THRUSH & CO.
P.O. Box 459, Peru, Indiana

Please send us your booklet about Thrush Flow Controlled Heating System and the new Thrush Flow Control Valve. We believe this will help us get new business as well as modernization jobs.

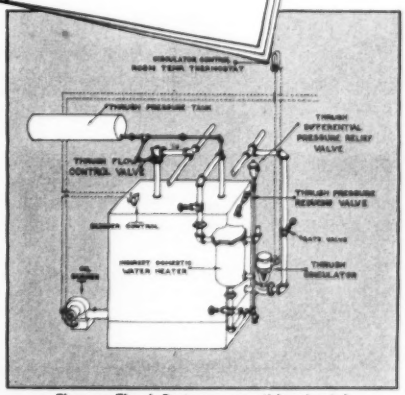
Name_____

Address_____

City_____ State_____

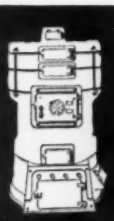
★THRUSH FLOW CONTROLLED HEATING SYSTEM

THIS BOOK FREE



The new Thrush System on an oil burning job.

H.A.THRUSH AND COMPANY PERU, INDIANA



Burnham Boilers

Let this

Free Booklet *stir up prospects!*

CONTRACTORS that are getting the business today depend on straight "reason-why" recommendations.

More than ever before, buyers are looking behind promises and demanding *facts*. Particularly when they buy boilers. With Burnham Boilers you sell on a straight reason-why basis. Four generations of making boilers, with constant research and improvement, have given us real selling facts about Burnhams, like the *long* fire travel that makes a *short* fuel bill. These facts help you get the business.

Our booklet, "Some Hither and Yons," gives these Burnham facts, together with a "humanized" general survey of all that concerns residence heating. It's a potent prospect "stir-up." Glad to send you a copy of "Some Hither and Yons" for yourself, and also to any prospects if you will let us have their names and addresses. Just use the coupon.

Burnham Boiler Corporation

IRVINGTON, NEW YORK

Representatives in all Principal Cities of the United States and Canada

----------TEAR OFF----------

Burnham Boiler Corp.
Irvington, New York

Please send me a copy of "Some Hither and Yons."

..... Name

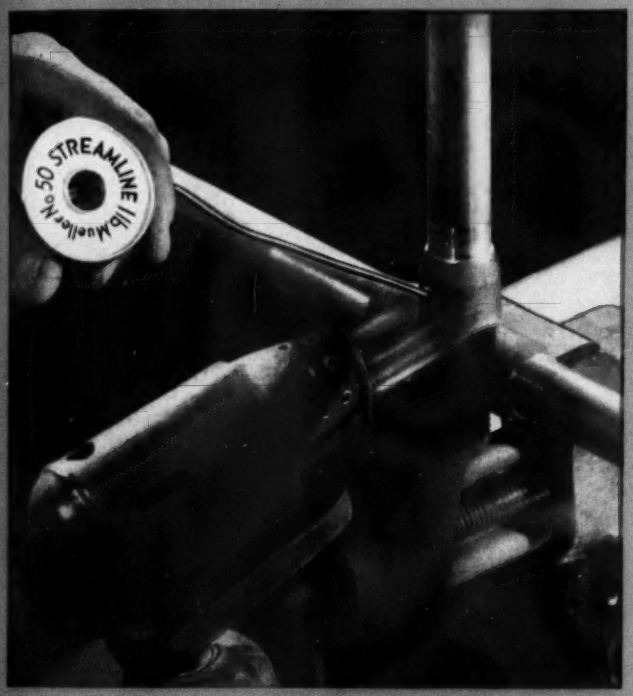
..... Address

TRADE MARK

STREAMLINE

REG. U. S. PAT. OFF.

IS THE PLUMBER'S AND STEAMFITTER'S GREATEST ASSET FOR NEW OR REMODELING WORK



Feed the solder through the feed hole only. In no other way can you be absolutely sure by visual inspection that a perfect leak-proof bond has been accomplished. This is a feature which no other connection possesses.

HERE is a fitting made for the plumber and steamfitter—a fitting that requires their tools and their skill to install. It is not for the Jack of All Trades NOR IS IT PROCURABLE FROM DIRECT-TO-YOU HOUSES OR DEPARTMENT STORES, BUT IS SOLD THROUGH LEGITIMATE JOBBING CHANNELS ONLY. The plumber's skill entitles him to a substantial profit and STREAMLINE Copper Pipe and Fittings are the means to this end.

A hack saw, a file, a piece of sandcloth, a blow torch, a can of STREAMLINE soldering flux and a spool of STREAMLINE solder wire are all that are required for an installation of STREAMLINE hard copper pipe and fittings—five simple operations. Gone are the back-breaking days of threading pipe. Science now takes the place of sweat. Mueller makes it possible for the journeyman to be again the craftsman of the soldered joint. A journeyman's skill, a few drops of solder and a law of nature now combine to make the tightest joint known to the trade.

The connection between Mueller STREAMLINE hard copper pipe and Mueller STREAMLINE fittings is positively leakproof. Expansion will not work it loose nor will vibration affect it. This Mueller patented joint is stronger than the pipe itself.

STREAMLINE—time-tested and proven—has three years of public acceptance—and the confidence of the trade. Thousands of installations throughout the country are a testimony of its outstanding merit.

Mueller STREAMLINE Fittings are protected by Patents Nos. 1,770,852, 1,776,502 and 1,890,998, other Patents Pending.

Our catalog and new price list are yours for the asking.

Mueller Brass Co.

PORT HURON, MICHIGAN

EVERY PLUMBER OUGHT TO *paste that in his hat!*

THERE'S no use kidding yourself. . . . Replacement jobs aren't going to walk into your shop and say, "Here I am." There *are* plenty of jobs around these days — but you've got to go after 'em and sell, sell, sell!

If you're satisfied with making minor repairs, you're missing a big opportunity for real service and real profits. It's bad business for both you and your customers to patch broken-down, out-of-date plumbing. It's *good business* to replace it with modern top-quality equipment at today's low prices. . . . With Scovill Equipment — the kind that saves money, works efficiently, lasts long, and keeps customers satisfied.

What's the best way to sell these replacements? Well, here's a mighty valuable sales-helper put out by Scovill — free for the asking, no strings attached. This shop bulletin (pictured above) packs in a lot of good sense and good salesmanship. Put it up in the shop where it can be seen by the men. It keeps the thought of selling before them all the time, and tells them *how* to go about it. Every plumbing contractor is welcome to a copy. Just write your name and address at the bottom of this page, tear it off, and send to:

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE • CONNECTICUT
Scovill Flush Valves—Shower, Bath and Lavatory Equipment—Tubular and Miscellaneous Plumbers' Brass Goods

Scovill

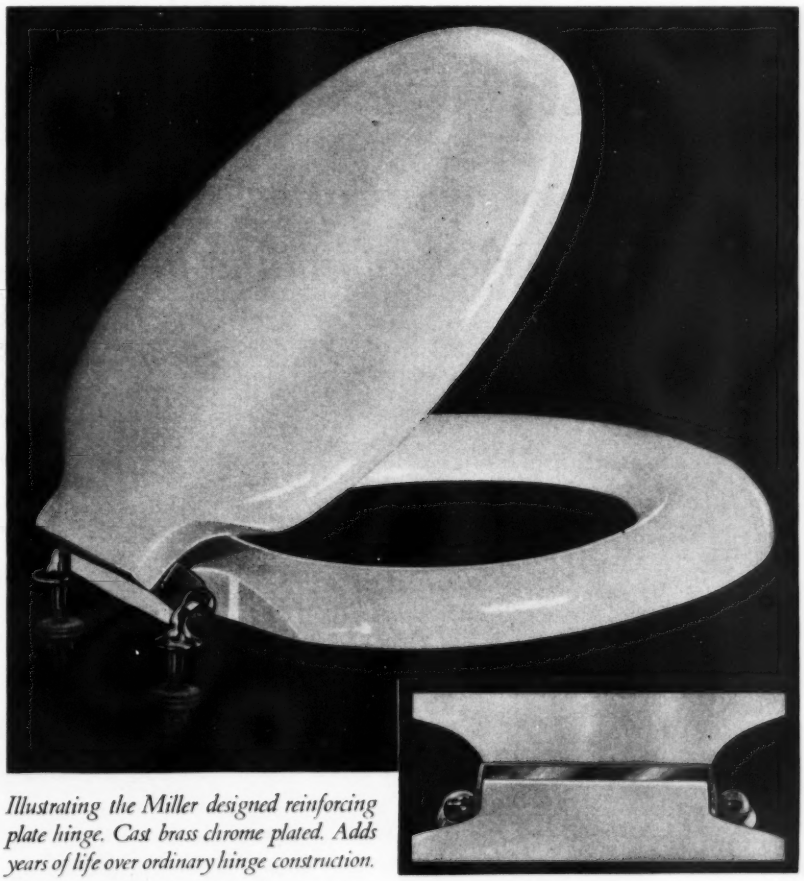
SCOVILL

Profitable *replacements* instead of petty *repairs*

It's the *Finish* that Counts!

The No. 1300 IN DU LUX FINISH » » » *Exclusive with* MILLER SEATS

RETAIL PRICE
$2.00



Illustrating the Miller designed reinforcing plate hinge. Cast brass chrome plated. Adds years of life over ordinary hinge construction.

THE No. 1300 regulat closed front toilet seat for standard sized bowl. Finished in white, orchid, canary yellow, green or pink, with choice of hinges to match color of seat, or hinges can be furnished with either chromium or nickel plate.

FROM the standpoint of eye appeal and long life, the No. 1300 is a natural value. Finished in Du Lux, exclusive with the Miller Line of Toilet Seats, the No. 1300 defeats the purposes of those agents of destruction which combine to shorten the years of service of ordinary toilet seats.

The DuLux Finish effects a mirror-like gloss, which instantly appeals to those prospects interested in a better looking seat and which is responsible for the increasing acceptance of the No. 1300.

Contraction and expansion, detrimental to ordinary seats can in no way affect Du Lux Finish because of its flexibility which remains constant over a long period of years.

Moisture, incidental to average service conditions, causing warping and splitting, is not harmful to Du Lux Finish, because it has the necessary water resistance to meet average requirements.

The ability of the Du Lux Finish to successfully resist the effects of cleaning compounds and the fact that the longer the seat is in use, the more resistant it becomes to the harmful effects of cleaning compounds is of especial interest to your prospects.

Du Lux Finish is immune to the effects of heat. No discoloration of the seat or deterioration of finish can come from its contact with heat in daily service.

The ORIGINAL Miller hinge is furnished regularly in nickel plate and chromium, or without additional cost, the hinge can be furnished in the same color and finish as the seat, an innovation now proving extremely popular.

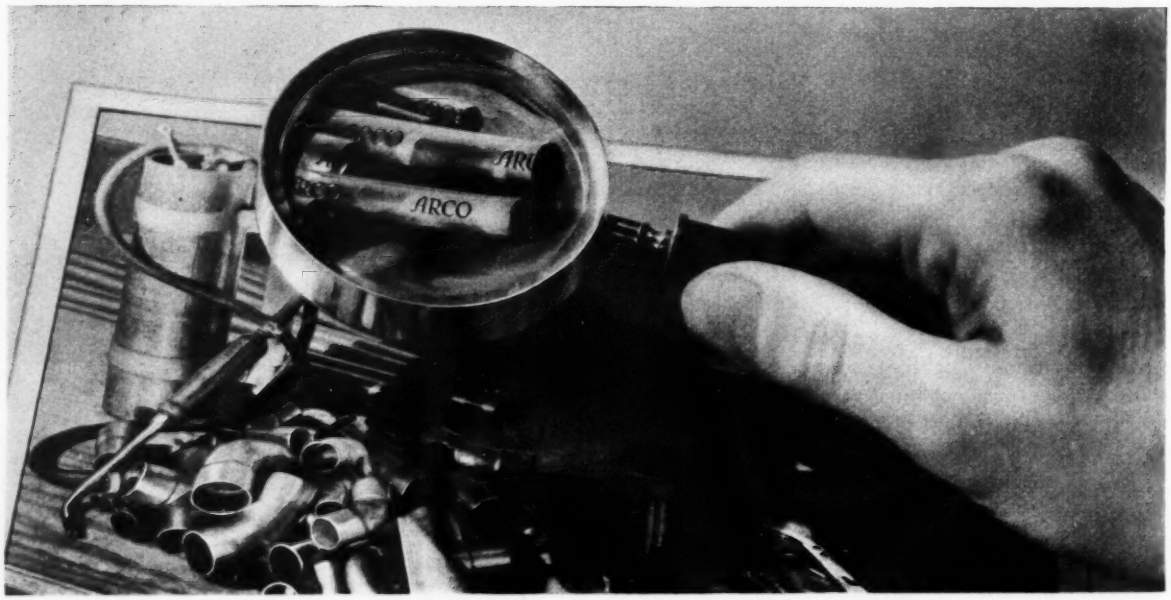
Ask your jobber's salesman to show you the No. 1300. Show it in your display. It will not only bring you a volume of seat business but will start other plumbing business in your direction.

CHAS. A. MILLER CO.

STURGIS MICHIGAN

ARCO Full-Flow Wrought Copper Fittings
WITH
ARCO COPPER PIPE

by means of sweated connections
make the perfect plumbing and heating installation!



Arco Copper Fittings, made up to and including 2" sizes, are complete even to the integral wrought copper tee. A comparatively small number of fittings is required, due to their commingling features.

Arco Copper Pipe — made especially for use with Arco Fittings — is carefully inspected and pressure tested before receiving the trade-mark "Arco", stamped every eight inches on each length of pipe.

Arco Copper Pipe can be furnished in Heavy, Standard and Light Wall. Insist upon the combination of Arco Fittings and Arco Pipe on your next plumbing or heating contract.

Patent Number 1,850,049—Other Patents Pending

COPPER PIPE AND FITTING DIVISION
AMERICAN RADIATOR COMPANY
40 West 40th Street, New York, N. Y.
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Copyright 1933 by American Radiator Company

CHICAGO FAUCET NEWS

Issued Monthly by The Chicago Faucet Co., 2700-22 N. Crawford Ave., Chicago, Ill., Vol. 1, No. 5.

ADD-A-SHOWER MODERNIZATION KEYSTONE

MANY HOMES STILL WITHOUT SHOWERS

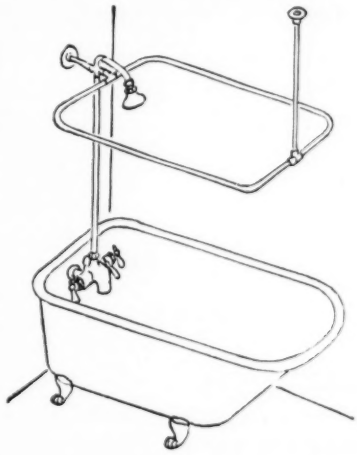
Because of the fact that many homes, otherwise modern, still lack showers, the Add-a-Shower is the keystone of the plumbers modernization arch. Young folks who have learned to bathe the shower way in school, club and Y. M. C. A., revolt against the tub bath. On the other hand, the older folks frequently prefer a tub. Tell them how they can keep the tub and yet please all by simply adding a shower.

A SOLUTION FOR EVERY PROBLEM

No tub installation has yet been discovered in an American home which cannot be modernized by some form of Add-a-Shower. True, some strange combinations have sometimes been necessary but the problem has always been whipped. Why not make a survey of the conditions in the homes of your customers? If you do that now perhaps when the weather gets hot this summer, they will decide to go ahead with the improvement and you will be all ready for them.

SHOWER BATHING SAVES WATER AND FUEL

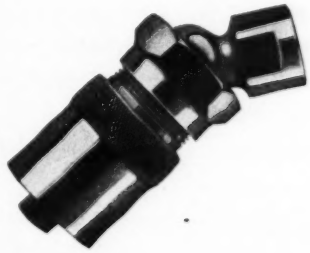
It is a well-known fact that shower bathing requires less water than tub bathing but it is frequently overlooked that fuel is also saved in even greater proportion. Plumbers should emphasize this point in selling the Add-a-Shower. In many homes water is not metered and, if metered, is not expensive, but *gas* is never cheap in the eyes of the man who pays the bill. Sell them on the economy as well



as the convenience of the Add-a-Shower, just as you show them that the saving on ice will pay for an electric refrigerator.

BROWNIE SHOWER HEAD FURTHER INCREASES ECONOMY

In a test made in The Chicago Faucet Co. factory, using a Brownie Shower Head and a Chicago Faucet conventional 4-inch shower head, the Brownie *saved 40%* of the water used by the ordinary head. Reports from installations indicate some water savings greater than that and fuel savings that are simply as-



tounding. In spite of using so much less water, Brownies give a very satisfactory shower because the stream is narrow and *all* the water hits the body.

HOTEL GUESTS FIND TUB BATHING REPUGNANT

Hotel clerks and managers find the traveling public more and more reluctant to bathe in their tubs. One manager of a middle class hotel in New York City pointed to a tub in his hotel and said, "Would *I* take a bath in there? Not for a million dollars!" How, then, can the guest be expected to relish it? The wise manager is putting in Add-a-Showers, thus anticipating the demands of his guests and making his house more popular. The wise plumber is calling the hotel man's attention to these facts.

WORLD'S FAIR HAS ALREADY DRAWN THREE QUARTER MILLION

Paid admissions to the grounds of a Century of Progress in Chicago are within striking distance of three-quarters of a million (735,653 to and including Feb. 13). Winter's cold has proven no barrier to those desiring to see "a world's fair in the making," and even on Wednesday, February 8, the coldest day of 1933 in Chicago, with the thermometer down to nineteen below zero, sixty-three persons paid admission to the grounds. Would you like to know more about the exposition that can show a record like this? Write to The Chicago Faucet Co. for 32-page illustrated booklet.

FAREWELL TO HARRY GALE NYE

You have shed upon the pipe trades for some thirty-odd years, the warmth of a personality unique, dynamic, inspirational. You have done us a world of good because you have made us laugh—often at ourselves. You have had us looking forward from week to week to your next entertaining ad. Will Rogers of the industry, we called you. We are sorry to have you go. We are going to miss you, neighbor. But we are thankful to have known you.

BETWEEN OURSELVES

Thanks: Domestic Engineering is the leading paper in the plumbing field.—J. R. W., Waterbury, Conn.

Results Are Promised

OUTSIDE the plumbing and heating industry, the daily news turns from the bright to the dark side and back again to the bright. But within the industry, evidence continues to accumulate on the brighter side. And the reason goes back to the common sense principle of working harder in the direction that offers the best promise of results.

Push Remodelling

THAT direction is remodelling. As pointed out in our last issue, mechanical service equipment like plumbing and heating wears and tears regardless of whether the owner wants to spend money now or not. He can patch his shoes and his clothes and can pass up a new suit, but when a heating plant refuses to function or a plumbing system clogs up or starts to leak, it must be put in order at once.

Cuts Expenses

WITH the improvement in the standards of plumbing and heating goods as they have been made in the last few years, a repair job is easier to make into a replacement one. Economy is so clearly demonstrable through the use of improved equipment, that self-interest requires the owner to consider and if at all possible to install the newer equipment which will cut down the running expenses of his home or his building.

Three Years of Progress

AS AN architect was telling us over the dinner table the other night, the last three years have brought on the greatest changes in home equipment that any comparable period has ever seen. He said that new materials and appliances, under test a few years ago, have in some cases won their place and still newer products are crowding forward for attention.

A United Drive

BACK of this effort to get more business from remodelling, repairing or replacement, is a stronger effort by all branches of the industry and the strength of related drives by other elements of the building field. Remodelling is foremost in every one's mind and the cumulative effect of this movement over a broad front is certain to reinforce the work of each individual.

Helps the Individual

THE opening article this time tells of how remodelling programs are being carried out both nationally and locally, both in the residence field and in industry. Philadelphia has been carrying on a "renovizing" campaign which enlisted thousands of volunteers reminiscent of the Liberty Loan drives. Groups of banks are studying the possibilities. In our own industry, more individuals are promoting the program. Like a rolling snowball, the remodelling movement is gaining weight and momentum as more attach themselves to it.

More Pool Inquiries

AN EDITOR'S mail, particularly when his readers have grown to count upon his business paper as a constant source of definite help, is a good cross section of his readers' activities. Lately, our mail has been bringing us inquiries about swimming pools, letters showing renewed interest in such work. Evidently, both public and private enterprises see a need for investing in pool projects and our readers want to know more about them. The article on pools tells you in a definite way just what a successful middle west contractor did on his last big pool job.

Something for You

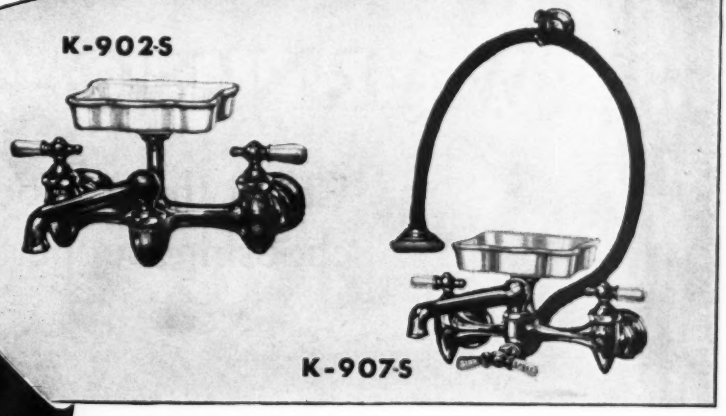
THIS month's issue runs over a wide scale of the many sided plumbing and heating business. Motorized repair trucks, an unusual block tin piping job, plumbing for 1,000,000 visitors at Chicago's Century of Progress, Jere Murphy's interesting comments on 50 years of plumbing progress, a scene from a Chinese plumbing and heating shop—these brief flashes testify to the variety and value of the offerings served up in this issue.

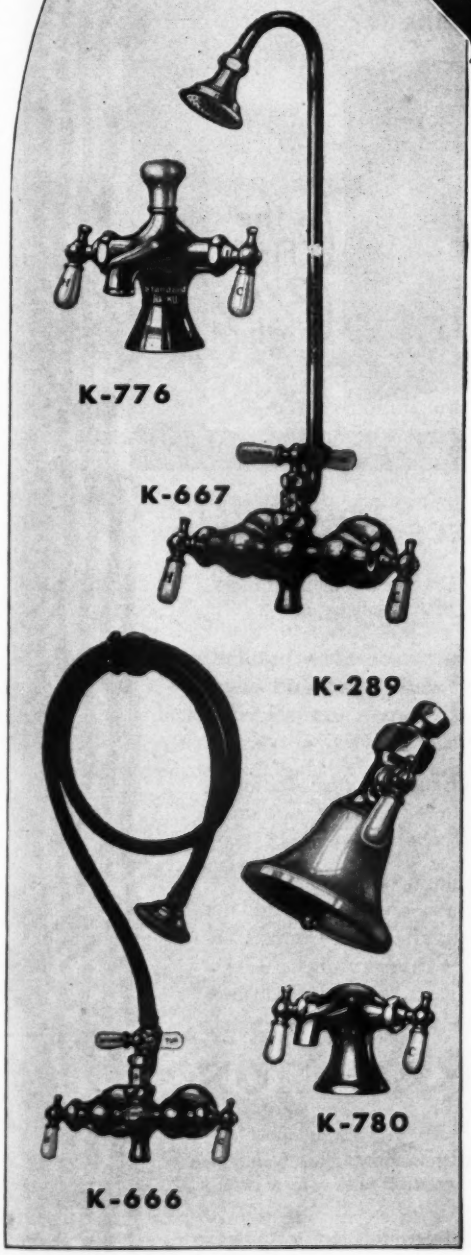
Next Month's Feature

AND next month, we have a real treat for every reader. A carefully studied and proved sales plan—one which some of our readers are using—is brought to you together with a surprising display of the items you can sell. It's worth watching for.

Your Editor

MAKE *Extra* PROFITS





BY MAKING HOME CALLS INSTEAD OF WAITING FOR PHONE CALLS

Don't wait for emergency calls, but meet the emergency by making calls. Every fixture with single faucets offers you an opportunity for profit by selling "Standard" Double Duty Fittings. Call upon homeowners now and tell them the advantages of double faucets to replace their old single faucets.

•

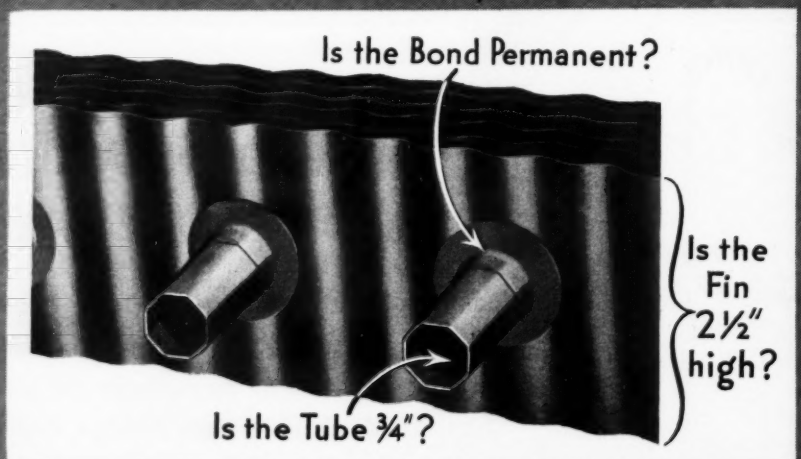
REPLACE OLD BRASS WITH "Standard" DOUBLE DUTY FITTINGS

Whether you only put in new brass or install the complete fixture, the kind of brass used makes a big difference! Point out to your customers that installation costs are no higher for "Standard" Double Duty Fittings than for others less modern. Yet, these fittings make possible tempered running water, provide extra convenience, extra service and extra satisfaction to customers—extra profits to you. Many plumbers are making these extra profits by selling "Standard" Double Duty Fittings at every opportunity on modernization jobs. » » » » » »

Standard Sanitary Mfg. Co.
PITTSBURGH, PA.
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

WARNING—

Check these 3 points in choosing Copper Radiators !



Take No Chances

UNLESS the copper radiators you install have ¾" tubes, they cannot give enough heat on very cold days. If used with hot water, smaller tubes do not permit enough circulation. If used with steam of any kind, smaller tubes give too little room for condensation return.

Depend on Erskine Copper Radiators. They have ¾" tubes.

Unless the radiators fins are 2½" high, they cannot give off the volume of heat required in cold weather.

Depend on Erskine Copper Radiators. They have 2½" high fins.

If the fins are soldered to the tubes, they may work loose and cause trouble. In any case, soldering lowers the efficiency.

Depend on Erskine Copper Radiators, with the patented, permanent all-copper bond.

Take no chances. Use Erskines on all steam and hot water heating systems. Conservative ratings. Lower prices. Send for catalog.

Check All Three
√ TUBE
√ FIN
√ BOND

ERSKINE COPPER RADIATOR CORPORATION

1 East 42nd St., New York, N. Y.
Vanderbilt 3-3913

Chicago, Boston, Philadelphia, Washington
Representatives in other large cities

Other Products: **All-Copper Water Heaters, Thermoist Humidifier, and Electric Radiators**

OUR INDUSTRY

March, 1933

Find Heating Dealer Best for Oil Burner Sales

HEATING CONTRACTORS are taking a more important place in the eyes of the manufacturers of oil burning appliances. And for good measure, the makers of gas burning equipment, finding utilities here and there giving up merchandising, are similarly discovering that this heating contractor has many advantages to offer the manufacturers whose products he is persuaded to sell and install.

Two reasons can be clearly seen as influencing the present planning of sales executives of oil burner manufacturers. Both reasons are comparatively recent developments.

On one side, is the definite trend toward combining the burner and the boiler as a unit. In some cases, this means an arrangement between a manufacturer of boilers and a manufacturer of burners to design and build the products for use with each other. In others, it means the development of a combination unit, designed and built by one company, often a boiler manufacturer with experience in selling heating plants and with many established customers among heating contractors.

The second reason is the change in economic conditions which has made specialty selling a more uncertain business. Men who could make a living and a profit when sales came easier have found it difficult to survive on specialty sales alone. On the other hand, the heating contractor carries on his own going business and his repair work will go a long way in carrying those overhead expenses which conspire to put down the specialty seller.

A swing back to the heating contractor is a healthy condition for those manufacturers of oil burning equipment. Automatic heat means first of all a plant which will serve its owner properly, with a minimum of service and expense. While a well designed burner or boiler is a necessary step to owner satisfaction, the proper installation is just as important. And the heating contractor's training and engineering skill means better installations.

Records show that the heating contractor is selling the bulk of oil burning appliances. To the man who thinks in terms of the big city markets, this statement may be surprising. But the aggregate of sales in smaller towns overshadows the record of specialty dealers in a few metropolitan centers.

It is to the advantage of these manufacturers that the heating contractor of today is frequently not only a good engineer but a much improved salesman over his predecessor of a few years ago.

Better Outlook for Remodelling Orders

MORE BUSINESS for the effort he makes is ahead for the man who goes after remodelling. Or you can call it replacement, or renovizing, or modernization or even repairing. The combined influence of a definite drive for such work by so many agencies in our industry and in related branches of the building field, is making each individual's effort more productive.

Also, one hears more now than ever before a general comment that expenditures on the home are returning dividends in comfort and satisfaction now when many other investments have proved disappointing. Taking advantage of this trend among home owners and of the momentum of local, national and associational drives, the individual reader will find his own sales work more productive and profitable.

Remodeling

now has the backing of campaigns of various types — local, national, industrial . . . . .

ALMOST six years ago, DOMESTIC ENGINEERING began its task of putting remodeling before the industry as a market of great dimensions. Gradually, as the charts for new construction showed diminishing totals, the industry has found it necessary to give more and more attention to the possibilities of modernization until today it "bolsters the plumbing supply trade," as "Dun's Review" for February points out.

Today there is, of course, no argument as to the value of remodeling business to contractor, wholesaler and manufacturer. It is the market that remains worth developing. The significant feature today is that any one, whatever branch of the industry he represents, who undertakes to merchandise modernizing work will have as a great advantage the fact that there are innumerable local and national campaigns being pushed to induce the home owner and the owner of rental property to undertake modernizing work now.

BUSINESS IS HELPED

Contractors experienced in industrial work will find that an equally vigorous campaign to induce manufacturers to bring plants up to date has been under way for something like five or six months. A news item, released in New York under date of February 5, had this to say about the plant rehabilitation campaign: "Rehabilitation projects aggregating $155,049,702 have been undertaken throughout the country, the national committee on industrial rehabilitation announced today. A. W. Robertson, chairman of the committee and chairman of the board of Westinghouse Electric and Manufacturing Company, said the total represents work planned or undertaken in response to the committee's activities.

"The last previous announcement showed a total of $142,115,351 on January 15. These projects cover a wide range in industrial plants and retail establishments which keep in contact with the committee. 'It is not a matter of vital importance as to where the credit for each rehabilitation project rests,' Mr. Robertson said. 'It is important to know that the movement for modernization is progressing nationally and having a beneficial effect on business and employment.'"

AIDS INDIVIDUAL CONTRACTOR

One hundred and fifty-five million dollars is a pretty fair sum of money—and thirteen million dollars for the period from January 15 to February 5 would indicate that the movement is gaining momentum.

There is, therefore, a fine background of publicity being built up to develop modernization work in homes, in rental property, in retail establishments and in manufactories. Against that background of publicity the individual contractor, or the local group, can hope to do a better job of promoting this type of work than when this paper tackled the idea in 1927, before there was anything like an organized national campaign.

That the movement toward modernization has caught the interest of the financial world is amply indicated by a number of facts. During the latter part of last year, in the Twelfth Federal Reserve District on the west coast, a very complete plan for a modernizing campaign together with the machinery for financing such work, was formulated by a member of the reserve bank committee. This was followed in 1933 with a recommendation made by the Allied Construction Industries of Minnesota to a special subcommittee of the Banking & Industrial Committee of the Ninth Federal Reserve District. This lat-

ter plan seems even more complete than the west coast plan. It lays down the procedure "local campaign methods," together with a plan for a state-wide campaign, outlining the machinery to be set up in order to carry on the work.

REMODELLING IS MAIN OUTLET

In addition to this type of promotion, the Department of Commerce has interested itself in a great many of the local campaigns which have been undertaken, and are now under way. A number of pamphlets have been made available by the department, reviewing a number of the local plans which have been in operation, etc. A member of our own industry is responsible for the Muncie plan, one of the most successful ever put in operation. W. E. Price, president of the Knapp Supply Company, was the driving force back of the Muncie campaign, which attracted nation-wide interest.

The issue of Dun's review referred to above says: "Home modernizing and remodeling now form the principal outlets of the plumbing supply trade," and looking forward with some optimism points out: "While new residential construction has not improved to any extent during the current year, the prospect for financing new projects, with the aid of the Federal Home Loan Bank, makes for a brighter outlook than was in evidence a year ago."

The campaign of the moment is the "Renovize Philadelphia" movement which is being watched with interest. It is reported that something like $15,000,000 has been definitely pledged by property owners, in a period of less than three weeks. The campaign was launched with the endorsement of President Hoover, and the thought stressed throughout is that it is good business to remodel "at today's bargain prices." Those in charge of the campaign feel that this appeal to the self-interest of the individual to help himself by making necessary repairs now to take advantage of the low prices is the most effective which could be adopted. A thousand trade, civic, community and religious organizations are co-operating with seven thousand volunteer workers. These workers went out with the purpose of canvassing every residence and place of business in the city and its suburbs. "Not since the Liberty Loan drives of the war days has staid old Philadelphia seen such community spirit and enthusiasm," says a report. The renovizing message has been carried to the public through full page newspaper advertisements, signs and posters on every street car, taxicab, subway and elevated. Thousands of posters were placed in store windows by boy scouts. Billboards were used; circulars went out with gas and electric bills; the radio brought the message, and every day the newspapers carried the news of the progress of the campaign.

OUR INDUSTRY IS ACTIVE

Those in the plumbing and heating industries identified with the Philadelphia campaign are as follows: Trenton Potteries Co., Crane Co., Kohler Co., Hart & Crouse Co., Motor Stoker Corp., Floyd Wells Co., Norristown Magnesia & Asbestos Co., International Nickel Co., Keasbey & Mattison Co., Standard Wall Covering Co., Vitrolite Products Co., Johns-Manville Corp., American Gas Products Co., Ruud Water Heater Co., Doe Oil Burner Co., Anthracite Institute, EverHot Heater Sales Co., Peerless Boiler Co., Petroleum Heat & Power Co., S. S. Fretz, Jr., Inc., Norristown Foundry Co., Inc., General Utilities Co., May Oil Burner Corp., Spencer Heater Co., Hajoca Corp., Lehman Sprayshield Co., Standard Tank & Seat Co., Edward R. Gobert, Fixit System, Inc.

One of the statements made in connection with the campaign is this: "It has the active co-operation of virtually every important civic, commercial and professional organization in Philadelphia because Philadelphians are convinced that business, not charity, needs their help most."

In 1927, before the fact was generally recognized, DOMESTIC ENGINEERING said: "There is a tremendous market for remodeling—business the contractor can develop—at his own price."

Swimming
Active

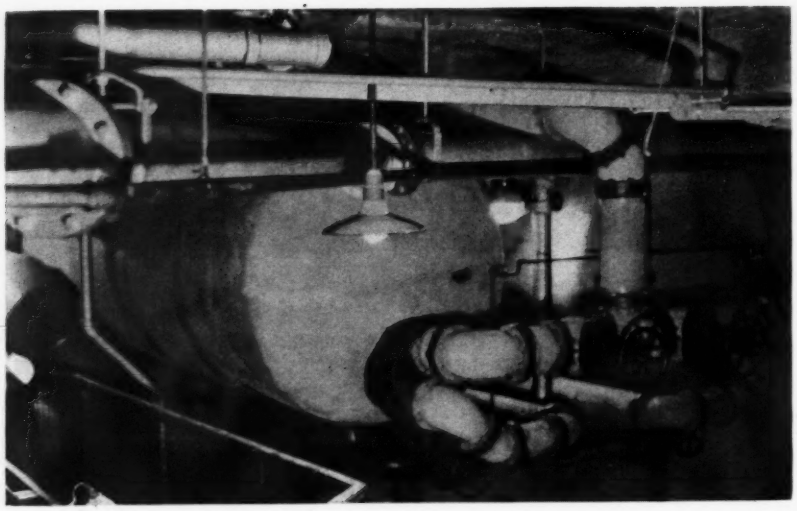


Fig. 1—The view above shows the heater ends of the storage water heater tanks. Another view of the same tanks, principally the right hand one, is seen in the two pictures below. The piping for this can also be traced on the drawing marked Fig. 4

By Wm. W. Stevens

IN considering this job, the conditions under which the pool was built should be recognized. The entire project was developed in connection with the county forest preserve system. The underlying idea was to build a pool which would represent the finest and which would include the best operating practices thus far developed. It was the first pool of its kind to be constructed on the plan of purifying and recirculating all of its water. Features were installed which you would not expect to find where the job was designed strictly as a commercial enterprise. The fees charged adequately take care of the operating and maintenance costs.

Five thousand persons is the number for which the pool was laid out. Last summer, during the first season, a peak of 8,700 persons were accommodated. In size, it contains 1,250,000 gallons and in arriving at this capacity, a number of factors were taken into consideration. These included such items as the area of the pool, the depth of the water and the recirculation provisions decided upon.

Familiarity with natural bathing places in connection with lakes, rivers and the ocean have created the popular idea that at more or less frequent intervals the entire contents of a swimming pool must be replaced if sanitary conditions are to be maintained. This article should go a long way toward correcting this understanding. In the case of the swimming pool described, there is absolutely no wastage of water except that which occurs through the normal use of the pool. All of the water is used over and over again.

The only water lost is that which is used in flushing the water closets; in backwashing the filtering equip-

Fig. 2—This picture shows mainly one of the 2,000-gallon water heating storage tanks. The supply and return connections for the steam heating coils are shown. Also, note the cold water inlet header at the bottom.

Pools—Reader Inquiries Show Interest

Letters from East, West and Middle West show that orders for pools will be placed this spring. "One of our customers is contemplating building a swimming pool," writes one contractor. "Kindly send us all available data on pools," requests another. "The town of Marysville is figuring on building a pool," says still another. Because pools can be self-liquidating, they will be built this year

ment; in operating the hose lines, the soap showers, the drinking fountains, in evaporation and in the overflow of the pool. The overflow through the scum gutter accounts for one of the largest water losses. Every person who enters the water displaces a quantity of water equal in weight to his weight. When 5,000 persons jump into the pool, obviously, the water level is raised and it overflows into the scum gutter. Then, when these people leave the water, the level goes down below normal, and new make-up water must be added. This is automatic through the operation of float valves.

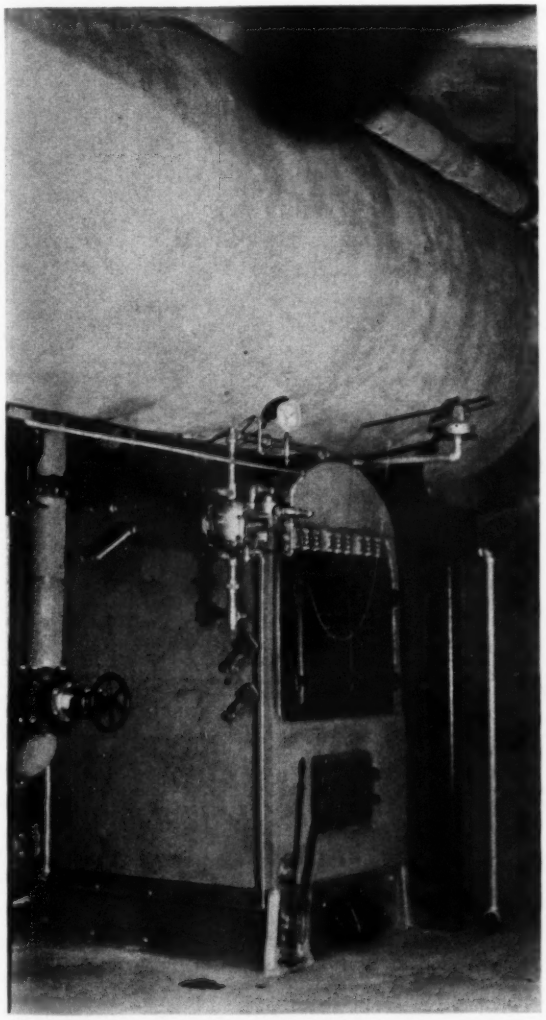


Fig. 3—Here is the combination gas-fired boiler and incinerator. It is automatically controlled by the aquastat shown at the top of Fig. 2, to heat the water for fifty-six showers and lavatories.

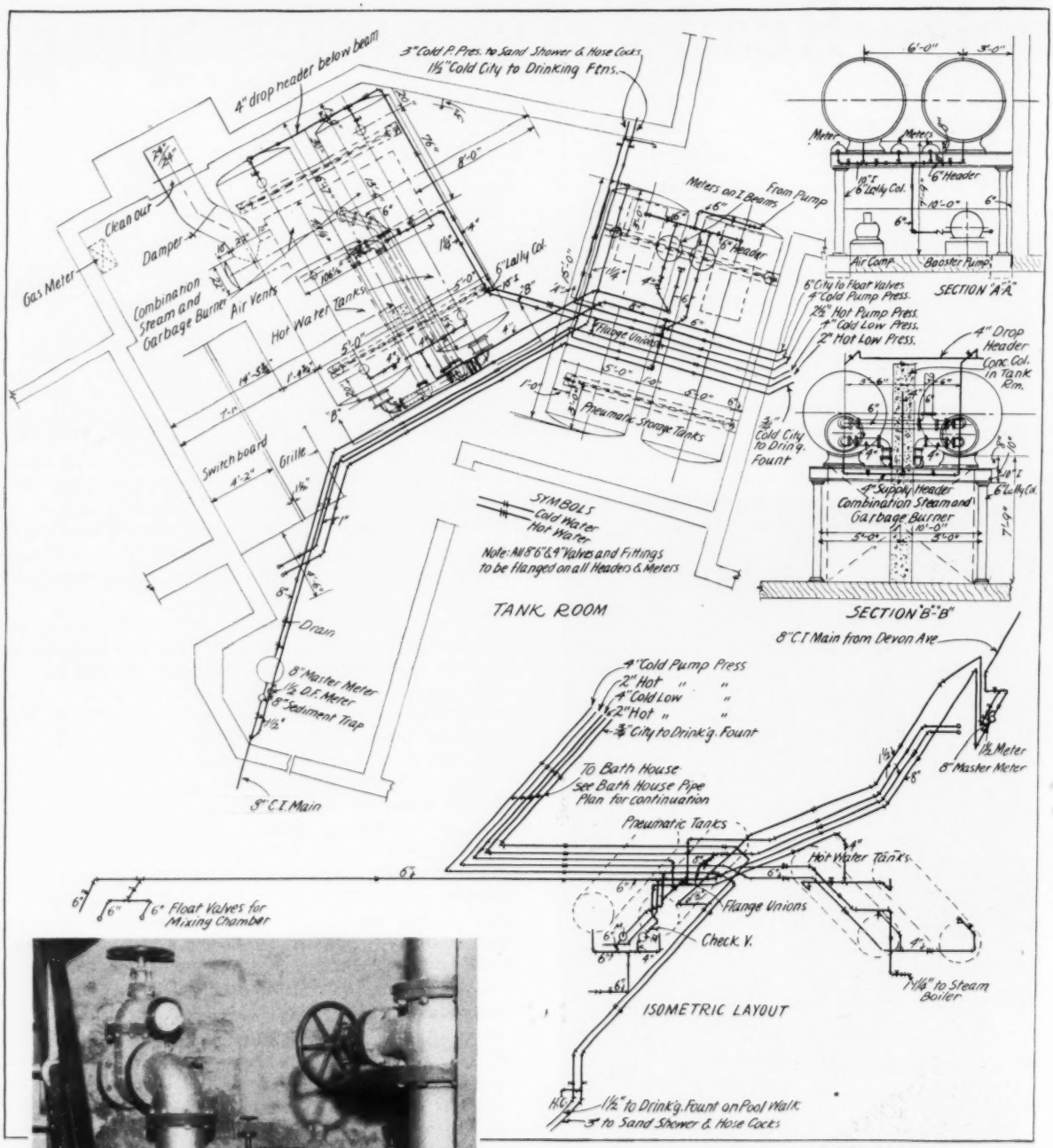
There is a distinct advantage in this overflowing of the pool water which in measure offsets the loss due to wastage. Leaves, dust, body oils from the bathers and other impurities float on the surface of the pool. The recirculation system is not designed to remove them. Accordingly, when the water overflows, this refuse is carried with it, thus further cleansing the pool.

This pool is in the city of Chicago and since operation in the winter is suspended completely, everything is drained. In starting again, in the spring, water is obtained from the city water mains. The partial plot plan, shown in Fig. 7, indicates that the city water main is located in Devon Avenue. Note that there is a main gate valve at the main. The main supply line is 8 in. in size. It runs as indicated in the plot plan and enters the building through the foundation wall shown in Fig. 5.

This illustration shows that immediately inside of the foundation, a second gate valve was installed. Next, there is shown a pressure gage, an 8-in. sediment or fish trap, an 8-in. master meter, a third gate valve and then the riser supplying all of the water services except the drinking fountains. This valving permits the cleaning of the fish trap or the repair and replacement of the meter without draining the system. The take-off ahead of the fish trap is the drinking water supply line. Note that the 1½-in. meter on this line also is valved for easy removal. The leg under the riser serves a double purpose. First, it provides a support for the riser and second, it is the means for draining a part of the system. Note the tee with the capped outlet.

All of this is also shown in the lower left hand corner of the tank room plan, which is marked Fig. 4. If the 8-in. supply line is traced on this plan, it will be observed that it goes to two places. First, it serves the centrifugal pump used in supplying the 2,000-gallon pneumatic tanks. At this point the line is reduced to 6 in.

Then it is carried on to supply the make-up for the pool water. This arrangement is indicated even more



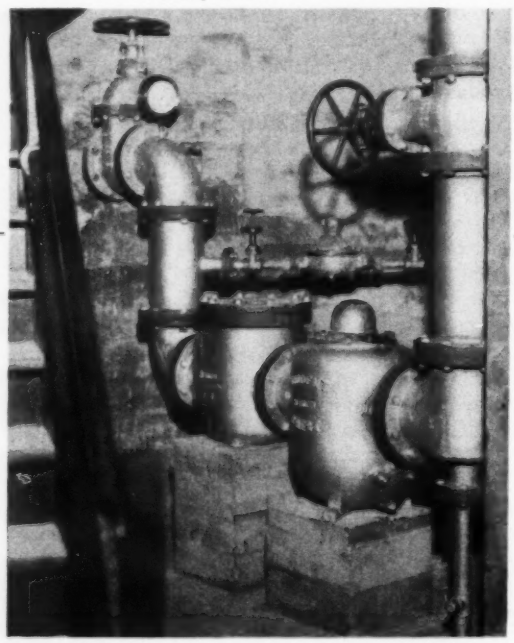


Fig. 4—Above is a plan of the pump room of the bathhouse. Note that in addition to the conventional plan, an isometric drawing of the piping and two elevations of the tanks are shown

Fig. 5—At the left is a photograph of the main supply line where it enters the building through the foundation. The small line serves the drinking fountains

plainly in the isometric drawing at the bottom of Fig. 4. The pump for the pneumatic tanks, as well as the tanks, are shown in the photograph marked Fig. 6. Note that both this and the isometric drawing show that the discharge of this pump is connected to a header which has four outlets. The two end outlets connect to the two pneumatic tanks while the two center ones serve the hot

and cold pressure lines. Here additional meters were installed. One meter is for recording the amount of water which is supplied to the hot water storage tanks and lines. The second meter registers the amount of cold water supplied to the showers, water closets, lavatories and hose cocks.

Essentially, these two meters measure separately all

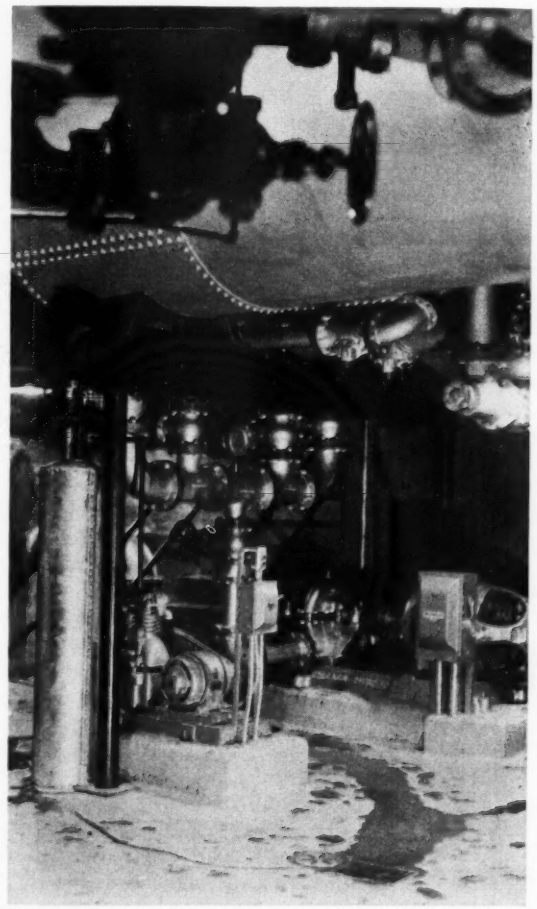


Fig. 6—This photograph and the one at right marked Fig. 8 should be considered together. They show pneumatic pressure tanks. Immediately above is centrifugal booster pump. To the left of it is air compressor and its pressure tank. This is to clean the motors and supply the air cushion in the pneumatic tanks

of the hot and cold water which is used on the job, excepting that which is supplied through the 6-in. main to the filtration and make-up chambers. The ordinary installation normally would not carry this number of meters. The four were installed here in order to obtain reference data for use in constructing

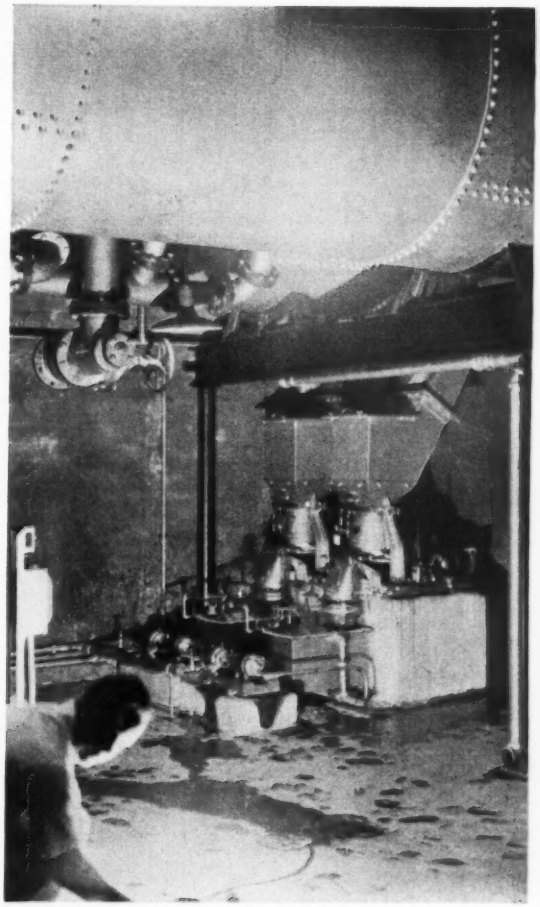


Fig. 8—This second view of the pneumatic pressure tanks also shows the chemical supply equipment used for the water treatment. The water in the city main has only a 35 ft. head or a pressure of 15 lb. per sq. in. This is raised here to from 55 to 75 lb. per sq. in. The ratio of air to water in the tanks is maintained manually at about 1 to 3

later pools. Only the master meter and the drinking water supply meter shown in Fig. 5 are needed for normal operation and here, the reason for the 1½-in. meter is that the small flow through this line is not sufficient to

(Continued on page 52)

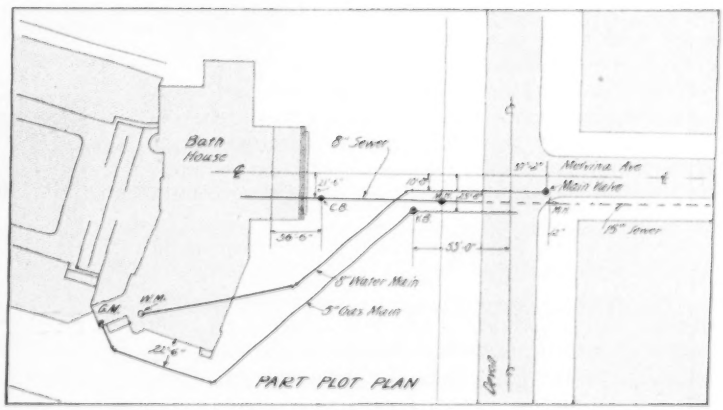


Fig. 7—The general plot plan is shown at the right. Note that the city main is in Devon Avenue. The eight-inch supply main for the bathhouse and pool is valved at the street main

What Must Be Carried in the Repair Truck?

A report, taken from a plumbing contractor's records, of the items most frequently needed as part of the stock of the shop on wheels

"COULD you give me some information relative to the lay-out and material items needed for a plumbing shop on wheels?" This request from a plumbing and heating contractor in Buffalo is typical of the many inquiries we are receiving which show an increasing interest in this subject. In developing this information, we have not only obtained the plans of a truck lay-out which has proved successful in practice, but we have found from job tickets, which of the 2,700 items carried in this truck are used most frequently. This has resulted from an effort to determine if any of the items carried could be eliminated. The following interesting and practical information comes from Wm. Faust & Company of Milwaukee, Wisc.

"The general procedure of repair work in our shop is as follows: On receipt of a repair order from the customer, it is given to the journeyman on the job record card. He then puts his own standard repair kit and standard tool kit on the truck and goes to the job. When he returns he replaces any material used to its proper bin in the truck. Materials used from his repair kit are replaced at a specified time each week or oftener if necessary.

"In Fig. 1, you will find a sketch of the layout of the bins carried by our truck.

"The bins are all numbered, the numbers being painted in white on the dark green steel bins. Across the lower part of each shelf of bins is a retainer for the white card on which the material is described and numbered. These cards are covered with celluloid for protection. There are 124 bins. These are grouped under 8 section, mounted a foot off the floor.

"The following is a description of material and equipment of special interest. Sec. 1 and 2 (38 bins) carry water pipe fittings and short pieces of lead waste and water pipe for repairing lead installations. Sec. 3 and 4 (bins Numbers 39 to 76) carry vent and waste fittings.

"Sec. 5, 6, 7 and 8 carry cutting and threading tools, wrenches for ⅜-in. to 2-in. pipe; also ratchet threaders. These tools are a standard part of the equipment carried and never are removed from the truck. This is a definite advantage because a man needs only his own kit and does not have to take a cutting tool box along in case he is ordered to repair a pipe line.

"All washers and parts for faucets are carried in the journeyman's own kit—the only additional material is three different float valves and a float ball, with the exception of a special kit of repair parts for special valves and mixers.

"On the floor under the bins is a set of laborer's tools—pick, shovel, spade and bar—for locating stop boxes or whatever the need may be.

"Also two 20-ft. sections of garden hose sewer and waste pipe rods and a street key for water curb shut offs are carried.

"A blow torch and plumbers furnace with lead and solder pot remain on the truck as regular equipment.

"We have just examined a number of our repair bills to determine what items require most frequent replacements.

"We find that among the fit-

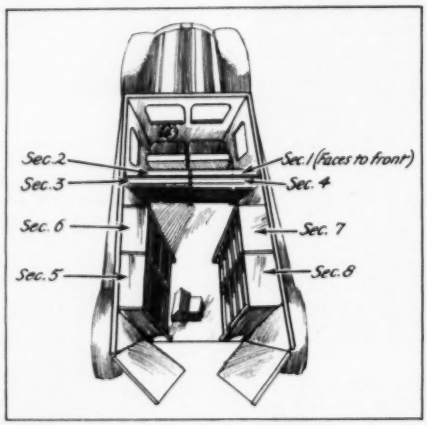
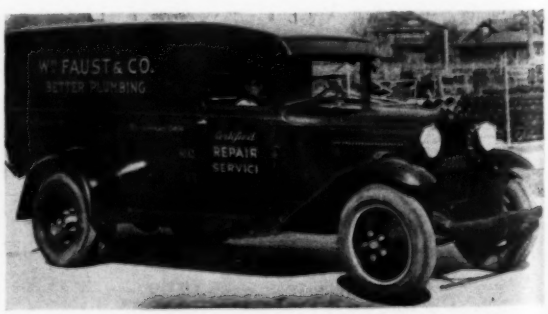


Fig. 1—Here is a view looking down on the truck to show the arrangement of bins. Note the bins of sec. 1 are reached from the front. Below is a view of the truck



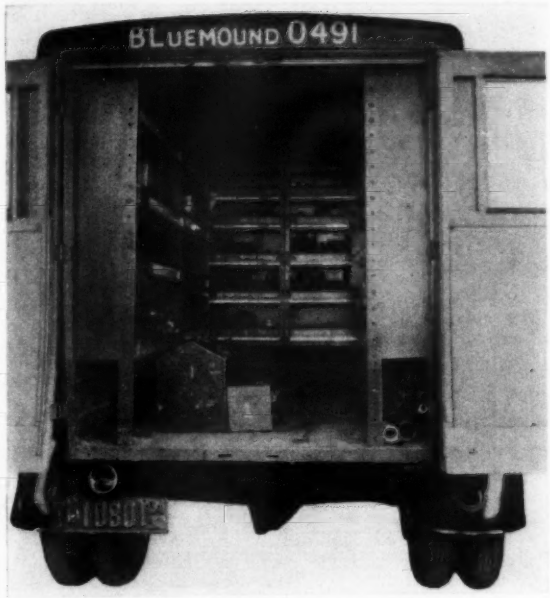


Fig. 2—This rear view of the truck indicates clearly how the bins are arranged. Note the pipe carried under the bins. There is plenty of space in the center for tool kits and other material

tings we use most are ¾-in. and ½-in. fittings, usually ells and 45 ells and the same size nipples and galvanized pipe.

"We use many couplings and drainage Y's and tees and 1½-in. nipples for installing cleanouts on jobs where a stoppage is relieved and where no adequate cleanouts already are in place.

"We carry two gas heater coils which require replacement frequently.

"A roll of graphited asbestos is used very often, but of course, goes a long way.

"The shower mixer parts (seats and plungers) only have to be replaced once in a great while but save the customer many a long trip and time going to the manufacturer for the same.

"The above parts are all stock parts of the truck.

"The float valve is of course replaced more than any other fitting, lavatory and sink faucets second.

"Compression washers, fuller balls and auxiliary closet tank repair parts and the like are used regularly. These are carried in the journeyman's own standardized kit.

"The following is a list of fittings taken from invoices covering a period of four months. These are from the repair truck stock.

16 ¾" gal. ells.
4 ¾ gal. st. ells.
2 ¾ 45 deg. gal. ells.
1 ¾ st. 45 deg. ell.
2 ½ gal. ells.
1 1½x⅜ gal. ell.
1 ⅜ chrome plated brass nipple.
5 1½" gal. nipples.
4 1½" caps.
5 ¾ gal. unions.
1 2x2 Dur. Y.
1 2" nipple and cap.
8 ¾ gal. nipples.
2 ½ gal. nipples.
3 ¾ couplings.
7 ½ gal. couplings.
1 ⅜ gal. couplings.
3 ¾ stop and waste.
4 sets mixer parts.

"The 1½-in. nipples and caps were used in place of cast iron plugs for cleanouts because they are more readily removed.

"The number of fittings is reduced somewhat, not necessarily by the abnormal condition of business but quite frequently repairmen doing minor repairs to faucets and fixtures, suggest repairs to a pipe line or connections that will benefit the owner, and make arrangements to do the job at a convenient time later. He then picks his fittings from the shop stock and uses another truck to do the job.

"We find the field of work in the repair line here covers such a large territory that it is almost impossible to select a certain number of fittings in order not to carry dead stock. This is why we equip the truck to carry a few of every size of fittings including in general, galvanized water pipe fittings from ⅜-in. through 1-in.; ⅜-in. to 2-in. galvanized nipples; 1¼-in. to 2-in. cast iron vent and waste fittings; 8 ft. of each size galvanized pipe ⅜-in. to 2-in. and 8 ft. of ½-in., ¾-in. and 1-in. black pipe."

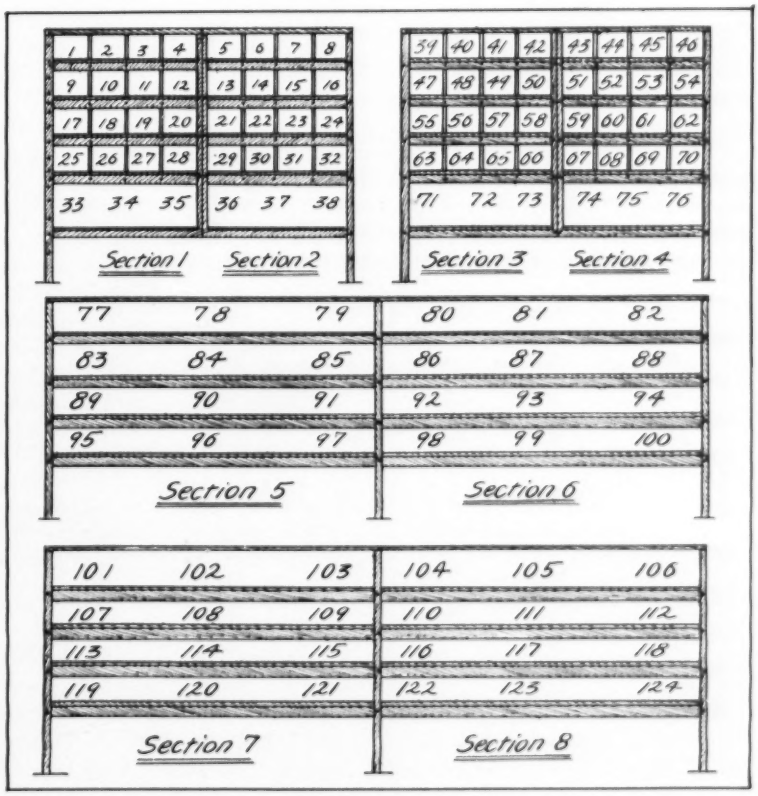


Fig. 3—The arrangement of the bins in the truck is shown in detail here. The numbering is just as it occurs in the truck. This should be coordinated with the sketch which is shown on the preceding page

Air Supply *as it affects* Heat Delivered *by a Boiler*

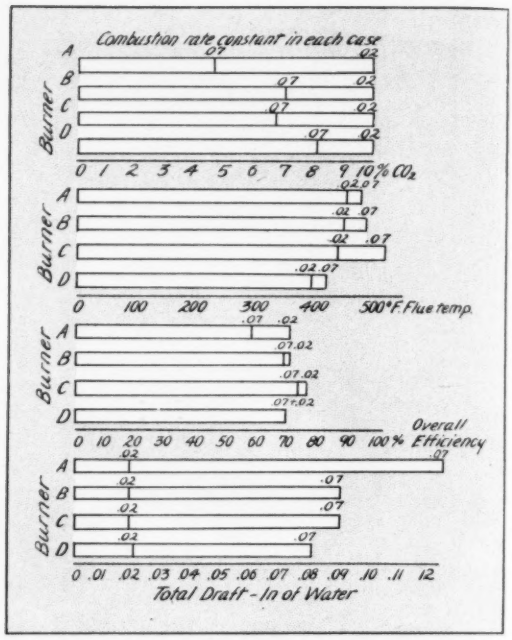

Combustion rate constant in each case
Burner
A
B
C
D
.07
.02
0 1 2 3 4 5 6 7 8 9 10% CO_2
0 100 200 300 400 500°F. Flue temp.
0 10 20 30 40 50 60 70 80 90 100% Efficiency
0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .10 .11 .12
Total Draft - In of Water

Fig. 1—These bars show the relative effect of changing the combustion chamber draft from 0.02 to 0.07 in. of water. The top set shows the effect on CO_2; the second set, the effect on flue temperature; the third set, the effect on overall efficiency and the bottom set, the effect on the total draft in inches of water

THIS paper proposes to show (1) the effect of combustion chamber draft variations on combustion, boiler efficiency, flue temperature and draft loss through the boiler, (2) a probable cause of draft difficulty in practice, (3) limiting factors relative to capacities obtainable, and (4) a possible explanation for inability in some cases to obtain the full rated capacity of a burner. Tests were made with a boiler in connection with four oil burners. The essential distinctions between these burners are outlined in the following: The burner designated as "A" had practically its entire air supply by natural draft. The control of this draft was by the boiler draft and by a slide damper in an opening below the boiler. In practice, the slide damper would be adjusted and would remain fixed thereafter. The oil regulation for this burner was described as being independent though mixed with a small amount of air in the pump, under pressure to assist atomization.

HOW AIR WAS SUPPLIED

In the case of burner "B", the primary air was supplied by a fan. It entered the combustion chamber with the oil in a manner intended to achieve good mixing. The secondary air was induced by natural draft through an opening to the combustion chamber located below the burner. Here the regulation of the oil came through an adjustment in the feed line.

The third burner was known as "C" and its air supply was similar to that of burner "B" except in degree. The primary air supply was relatively larger in proportion to the total. The oil feed was solely dependent upon the rate of primary air which was fed.

Oil burner "D", the fourth one, received its entire air supply from a single source under comparatively high pressure. The regulation in this case was independent.

EFFECT OF DRAFT INCREASE

The burners were set for a fuel rate averaging about 16½ lb. per hour; the combustion chamber draft fixed at 0.02 in. of water and the air regulated to produce a carbon dioxide content of 10 per cent or about 50 per cent of excess air. The efficiencies under these conditions which, although not all the same, were consistent as to type.

The combustion chamber draft was next increased to 0.07 in. of water. Fig. 1 shows that the carbon dioxide (CO_2) and efficiency decreased while the flue temperature and total draft increased, the degree of change being somewhat variable as regards types of burners. This is substantiated by previous tests of a similar character.

If the draft loss through the boiler is calculated (total or smoke-pipe draft—combustion chamber draft) it shows that this value rises rapidly as the carbon dioxide (CO_2) decreases (Fig. 2). It will be noted that seemingly little or no draft loss exists through the boiler at 0.02 in. of combustion chamber draft. This is not strictly true, but the loss in the boiler used was very small. It must also be remembered that whenever a vertical flue passage exists there is a chimney effect

By L. E. SEELEY, H. J. POWERS and E. J. TAVANLAR . . . . *This paper was delivered at the Cincinnati meeting of the American Society of Heating and Ventilating Engineers*

present within the boiler itself which assists in the movement of the gases. A special gas boiler with a non-mechanical burner is an excellent example where the chimney itself is of no direct help to this boiler because of the hood or back-draft diverter employed. Small, vertical, coal-fired boilers at certain outputs will show a draft reading in the smoke-pipe less than that in the combustion chamber itself. Regardless of this, the smoke-pipe draft is the one that must be produced by the chimney at the boiler outlet and Fig. 2 shows that this requirement does increase rapidly with a decrease in carbon dioxide (CO_2).

One explanation for chimney draft troubles which has not received the attention its deserves may be found from the foregoing statement. It is generally understood that a low percentage of carbon dioxide (CO_2) indicates a large amount of excess air. The actual relation between

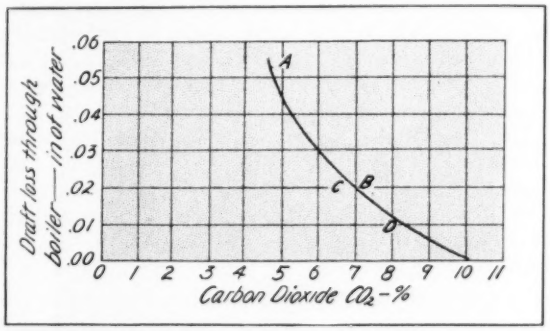


Fig. 2—If the draft loss through the boiler is calculated, it shows that this value rises rapidly as the carbon dioxide (CO_2) decreases. This is shown in the above chart. It will be noted that seemingly little or no draft loss exists through the boiler at 0.02 in. of combustion chamber draft. This is not strictly true

excess air and per cent carbon dioxide (CO_2) is not so commonly understood (see Fig. 3) and more particularly the principles that relate to the flow of gases.

The latter may be explained by considering the following facts:

1. All gases resulting from combustion, as well as excess air and nitrogen, must flow through the boiler flues, the breeching or smoke-pipe and the chimney.

PRINCIPLES OF GAS FLOW

2. All the flow areas of these passages are fixed in amount.

3. The velocity of the gases through these respective parts, therefore, depends upon the volume of gases to be handled.

4. A certain pressure difference or draft will be required to achieve and maintain these velocities against the frictional resistance of flow.

5. The velocity varies as the square root of the draft head (Velocity = Constant $\sqrt{h}$).

It is evident, therefore, that if twice the volume of gases results in one case as compared to another, due to different air adjustments, the draft required will be four times as great, even though the velocity is only doubled. Whereas this example may represent the difference between a good and a poor installation, the variation in draft requirement is so great that in practice the difference between a *moderately good* and an *only fair* adjustment may be critical if the chimney happens to be *weak*.

RESULT OF POOR ADJUSTMENT

The difficulties become cumulative. A poor adjustment calls for a higher oil feed due to reduced efficiencies, thus increasing the volume of flue gases. Furthermore, practically all of the tests to date have shown that an increase in excess air increases the flue gas temperatures. This merely aggravates conditions because the effect is to increase the volume of flue gases beyond that due to the excess air alone. Although this increased temperature may improve chimney draft to some extent, any resulting increment in draft will always be insufficient to produce the increment in velocity which the same event makes necessary.

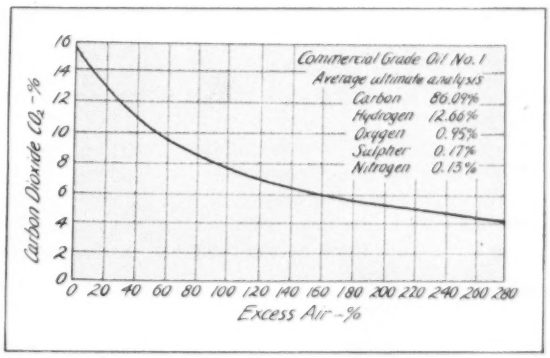


Fig. 3—The actual relation between excess air and per cent carbon dioxide is not so commonly understood and more particularly the principles that relate to the flow of gases. This chart shows the relation between the per cent of excess air and the per cent of carbon dioxide

Furthermore, oil burners, with few exceptions, are set to produce the maximum heating load imposed by the heating system. This means that the chimney is expected at all times to handle comparatively large quantities of gases. This is another reason for not adding the *final straw* which in this case is excess air. It is not to be assumed from the foregoing that a great many chimneys are inadequate for oil burners. There are *border line* chimneys, however, that would prove troublesome for any method of fuel burning and it is with these that care is required. If a draft condition is bad and no other improvement can be made, the excess air should be reduced if possible—perhaps the rate of oil feed also in extreme cases.

It is evident if oil and air adjustments are to be well made and maintained that control of combustion chamber draft is absolutely vital to burner *A*, important as to *B* and *C* and comparatively unimportant to *D* (Fig. 1).

The efficiency curves based on intermittent operation give the truest picture of the average efficiencies obtainable in practice. In order to study this feature of the work the curves were plotted by arbitrarily shifting them from their true values to coincide at 75 per cent efficiency

and 1,000 ft. *radiation* boiler output, (Fig. 4). This was done solely for the purpose of comparing the curve shapes and the graph should not be used for any other purpose.

ESTIMATING LIMITING FACTORS

It shows quite clearly that the order of preference would be *D, C, B* and *A* if during operation they all produced exactly the same efficiency and output as shown by Fig. 4. The differences reflect the relative ease with which air can continue to flow into and through the boiler during the *off* period and thus carry away heat previously stored in the boiler and refractories.

When this is coupled with the fact that the curves could all be lowered by an increase of combustion chamber draft an amount equal to the decrease in efficiency shown in Fig. 1, the influence of the method of air admission becomes most striking.

Fig. 5 was used as the basis for estimating the probable limiting factors for the burners tested. The values were obtained as follows:

1. The quality of combustion (*i. e.* per cent carbon dioxide) was required always to be at 10 per cent and the flame clean.
2. The air and oil supply and draft was increased, if possible, with the above restriction.
3. The boiler output was measured in every case.

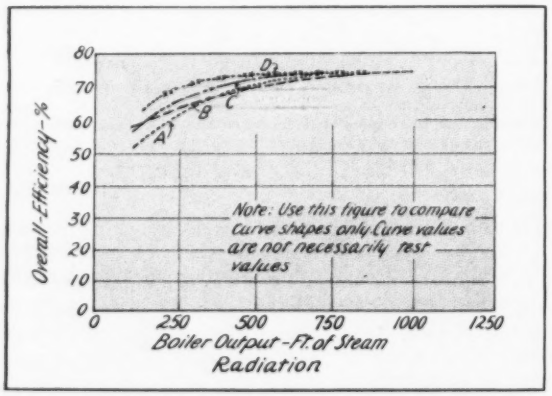
For instance in the case of burner *"A"*,—oil and draft (or air) were not limited—the limit was in the combustion chamber probably in mixing. If a larger proportion of excess air had been allowed the fuel burning rate might have been increased.

Fig. 3 indicates one reason why an oil burner may be considered to be too small when its rated capacity indicates that this should not be the case. If, for example, a burner supplying all its air by means of a fan, is adjusted to 12½ per cent carbon dioxide (CO_2) with a certain combustion chamber draft, the maximum rate of fuel burning will be established when the fan is wide open. If the burner is rated at this value or even somewhat less and then placed in the field where an adjustment of only 4.8 per cent of carbon dioxide (CO_2) is obtained—a possible event—it means that twice as many pounds of air per pound of fuel are being supplied. The result is about one-half of the original amount of oil can be burned. With the same combustion chamber draft the fan can deliver no more air on the job than in the laboratory. The boiler output will be reduced usually more than half due to lower efficiencies. The burner is considered to be too small when a better adjustment of oil and air (*i.e.* decrease in excess air) might remedy the trouble. The adjustment of oil and air cannot be properly measured except by analyzing the gases by means of an Orsat.

While the foregoing is not the sole cause for such a condition, (*i.e.* the combustion chamber design may be unsatisfactory) it is still true that the actual quality of performance conclusively rests upon those who install the equipment.

CONCLUSIONS ARE LISTED

1. In a burner which receives its air supply by natural draft exclusively the quality of combustion is very sensitive to draft fluctuations. This is important because of the adverse effect on efficiency. In practice the supply of air could be either too great or insufficient unless carefully adjusted and precisely regulated thereafter. During intermittent operation its stand-by or off-period losses will run higher than other burners.
2. A burner which receives its air supply exclusively from a fan will generally be the least sensitive to draft changes and more satisfactory during intermittent operation. This will differ in degree depending upon the relative resistance which the fan and other parts set up to the flow of air during the off-period.



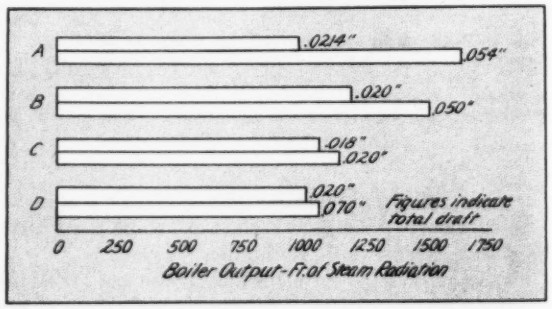


Fig. 4—Left. The efficiency curves based on intermittent operation give the truest picture of the average efficiencies obtainable in practice. In order to study this feature of the work, the curves were plotted to coincide at 75 per cent efficiency and 1,000 ft. radiation boiler output

Fig. 5—Above. This was used for estimating the probable limiting factors for the burners tested

3. Intermediate types will generally occupy the middle ground between the preceding two. There will never be a sharp line of demarcation and a certain amount of overlapping is to be expected.
4. If a means could be found to stop the flow of air through a boiler during the off-period regardless of type of burner the foregoing differences on intermittent operation would virtually disappear and the average efficiency would be increased.
5. If the maximum fuel burning rate proves to be insufficient for the job it may in some cases be raised by reducing the excess air.
6. The greatest improvements and the hope of maximum success lie in the field of installation.

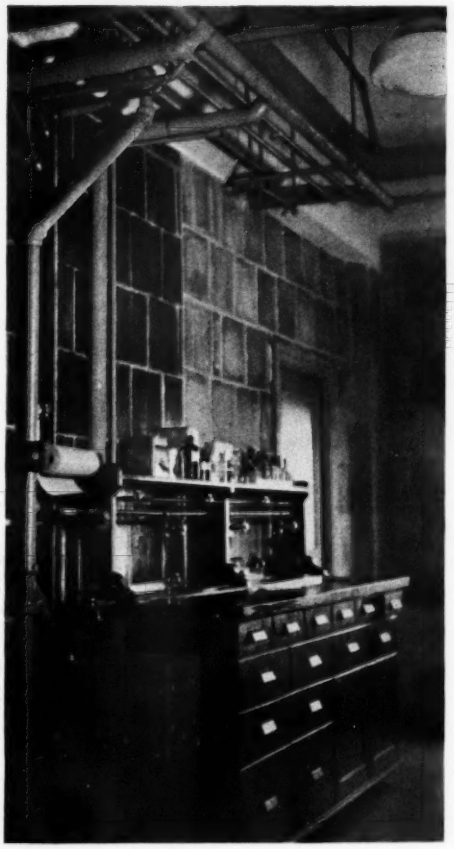


Fig. 1—At the left is one of the laboratory tables to which distilled water was run through block tin piping

BY GEORGE HALL

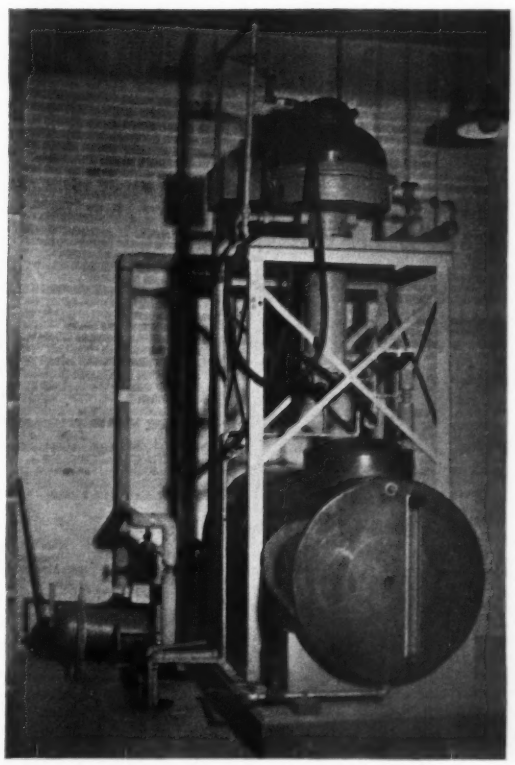
Solving an Unusual Block Tin Pipe Job

Was only one of the problems met on the Forest Laboratory at Madison, Wis.

THE large proportion of government, hospital, school and institutional work, in relation to other types of new construction, makes information on the latest approved practices used for it, of particular interest and practical value at this time. This article has been developed with this idea in mind.

The government specifications require that the block tin piping should be installed fully encased within a larger size of steel piping. How to form a block tin tee within a steel tee then became the question. The job referred to is the Forest Products Laboratory located at Madison, Wisconsin, the plumbing, heating and ventilating for which has just been completed by W. J.

Fig. 2—Below is shown the still for producing distilled water. All of the metal which comes in contact with the distilled water either is tinned or consists of block tin



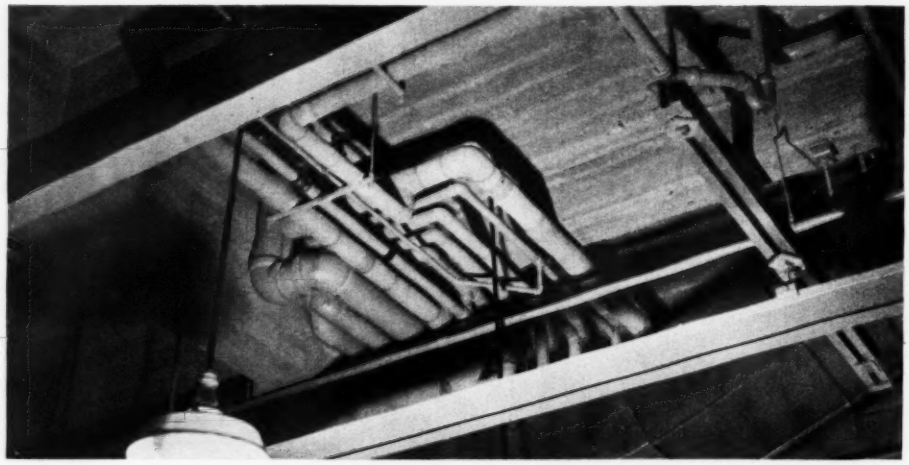


Fig. 3—The specifications called for the hanging of the distilled water lines from the same trapeze hangers installed for the other piping. Above is shown an offset in the main service risers from the adjoining bay. It is an excellent example of the installation of fine pipework in unusually close quarters

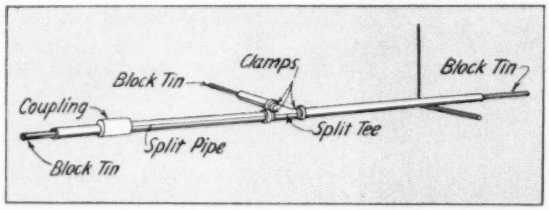


Fig. 4—Below is a detailed drawing showing how a tee was made within a tee. Note that only the short length of pipe ahead of the tee and the encasing tee were split and that only three clamps were necessary to hold all of it in place. The tee and the coupling hold the split pipe together. Perfect protection is provided and the split is almost not noticeable

Hyland Co., also of that city. The block tin piping is that which was installed to carry the distilled water from the still in the pent house to the various chemical laboratory tables and other special services throughout the building. In passing, it might be questioned why such elaborate precautions should be taken for merely piping water, both as to protecting the pipe and using a special material. In the first place, water is one of the most universal solvents known and in coming in contact with many of the metals used in piping, it picks up minute traces of the metal. In ordinary practice, this is such a small amount that it is unnoticed but in chemical analyses, even the faintest trace is detected and the laboratory result is made misleading. As for protection, all who have ever worked with block tin piping are familiar with its need for mechanical support. Usually this is accomplished by suspending an open trough from the ceiling and by laying the piping in it. However, this affords no protection from above. If anything is dropped onto the piping from above, then it is damaged.

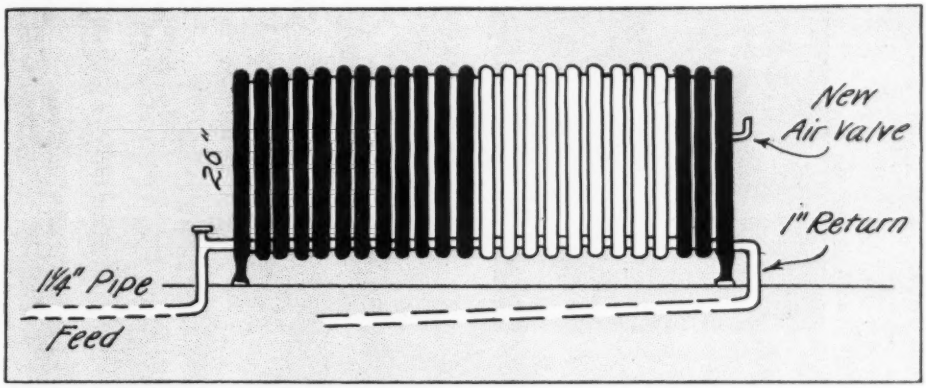
In a previous article describing the management of the entire job it was stated by the contractor that "At many points throughout our installation work we found ourselves outside the field of general practice and experience and thus compelled to improvise somewhat in the solution of our more difficult problems." The problem of installing this piping was the direct cause of the foregoing statement. How the job was done is understood best from the following description which is from the W. J. Hyland Co.

The only feature of the job that presented any difficulties of a mechanical or practical nature was the erection of the distilled water system. The specifications required that this supply be carried in extra heavy block tin pipe, run in 1-in. gal. steel pipe along the same trapeze hangers as the remaining service piping. If you consider that there were in all about forty openings on the various floors you will appreciate the problem of making solder joints to the main run for the branches to the laboratories and at the same time encasing the whole in the 1-in pipe and fittings. We made some attempt to have this requirement changed to permit the use of square conduit at the ceiling, which would have made available the use of outlet boxes for the tee branches, but without success. Hence we were compelled to improvise methods. Our plumbing foreman finally hit on a very ingenious way around the difficulty.

Using a coupling about 12-in. from this joint, he split the pipe up to the tee. The tee also was split and after making his soldered connections he clamped his pipe and tee in place and continued. A very close examination would be necessary to disclose the split.

The sketch marked Fig. 4 shows in detail how the work was done. The clamps merely consisted of a single wrapping of wire with the ends twisted together tightly. Only three clamps were used at each tee, one being placed at each opening. Since the split pipe fitted into the solid coupling, no clamp was necessary there.

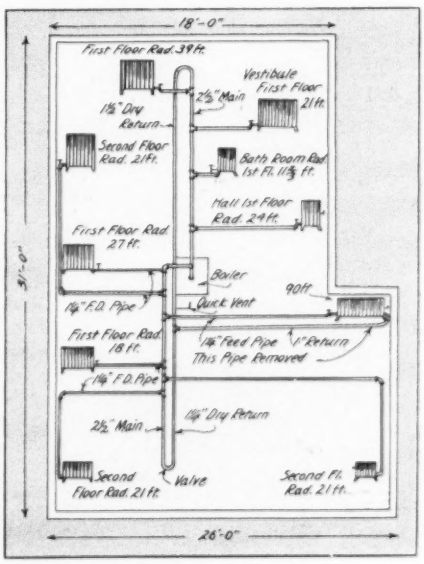
Why Won't This Radiator Heat?



"We would like to know why the sections of the above radiator, which are marked black, heat satisfactorily and the sections in white stay cold even with 5 lb. or more pressure at the steam boiler. The inside of the radiator is clean and all of the other radiators in the system heat satisfactorily."

OUR reply to the above inquiry is outlined in the following general discussion and specific recommendations. Note that later the reader tells what he did.

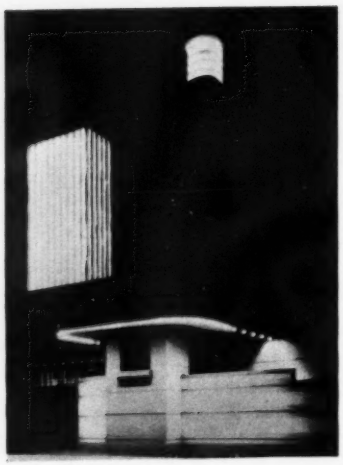
If you had included in your sketch, which is shown at the top of this page, a complete outline of the piping, it would be possible for us to tell you more accurately what is the difficulty. On the surface, it appears that the radiator is receiving steam through both the supply and return connections, thus preventing all of the air from being forced out. The pocket of air in the unheated sections, of course, it held there by the two opposing steam supplies. Is this radiator the last one on the steam supply line? Also, where does the return riser for this radiator connect into the main return? As you probably know, the return connection from each heating unit should be carried separately to a wet return below the water line of the boiler when the two-pipe air-vent system is used. If this connection has been made above the boiler water line, then steam from the return end of the supply main finds its way into the return riser of the radiator. The reader again writes:



Here is the plan which came later. Note the dry return was removed to correct the trouble

"Thanks to Domestic Engineering," wrote this reader after putting into effect our suggestions for his problem. "The radiator now heats to perfection."

"This will give further information regarding the trouble we have had with a steam plant and why it would not work properly. The job was installed about twelve years ago. It worked fairly good for a few years and after that it did not work properly. The boiler was used a few years more, when the owner had it removed and a new boiler was installed. This did not work satisfactorily either, so the owner had a trouble man look over the house to see if he could locate the trouble. He said everything appeared as it should be. However, regardless of the fact that the owner, in the morning, would open the drafts at least two hours before heat was desired, no heat could be raised. There would be from 6 to 8 lb. of steam at boiler with no heat in the radiators to amount to anything. When we went to work on the job we found a heavy oil film on the inside of the boilers and in the radiators. We cleaned out the entire system thoroughly, with the result that now heat is obtained with no pressure at the boiler, even during the coldest days of the year. The connections for the large radiator, about which we first wrote you, were changed as shown in Fig. 2 and now the radiator heats to perfection. The room in which it is placed formerly was the coldest room in the house. Now it is the warmest room, thanks to DOMESTIC ENGINEERING."



Century of

Installing

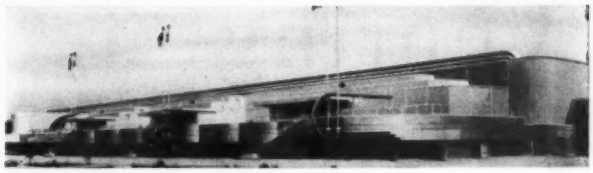
SANITARY sewerage facilities to meet the requirements of 1,000,000 persons a day are being provided for Chicago's 1933 World's Fair—A Century of Progress Exposition. At the same time a water pumping system furnishing drinking water for the Exposition visitors, necessary water for fire protection and other purposes is being constructed.

There will be four sewage pumping stations serving the grounds. Two of the pumping stations are already installed and operating on one-third of the pumping capacity that will be required during the Exposition.

The sewage pumping station at 20th Street will have a capacity of 12,000 gallons per minute. The stations at 25th Street, 35th Street and on Northerly Island will have a capacity of 3,500 gallons per minute each, making the total capacity of the entire system 22,500 gallons per minute. The capacities are based on two pump units. They correspond to the maximum hourly sewage flow anticipated at each station. One additional pump unit will be provided at each station.

There will be three pumps in each station, making a total of twelve pumps for the system. These will all be centrifugal open impeller type pumps, with direct

Progress



Plumbing to Serve Million Persons Daily

connection to motors and to the automatic float control.

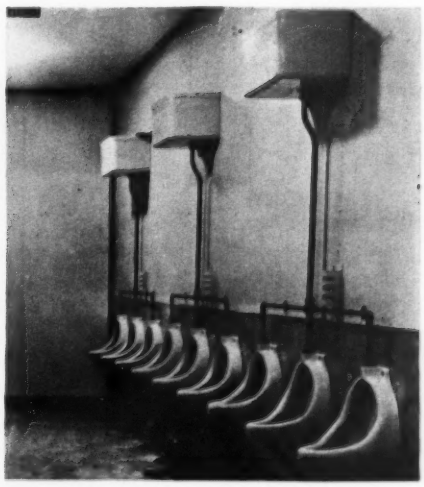
The sewer pipe varies from 42 in. in diameter to 8 in. in diameter. The larger pipe is used in all the main lines. For example, there is about 700 feet of 42-inch concrete pipe used in the lines adjacent to the 20th Street pumping station. The method of installation follows standard engineering practice in systems of this kind.

In addition to the sanitary sewers, a system of storm sewers comprising six miles of concrete pipe is being constructed. This pipe ranges in size from 30 in. diameter to 8 in. The system is designed to drain the roads, grounds and landscaped areas. The storm sewers drain directly into Lake Michigan by gravity, thus obviating the necessity of a pumping system.

The pumping station will have a capacity of 28,000,000 gallons of water daily, with all three pumps in operation. Except in emergencies the system will be operated by two pumps, with the third kept in reserve.

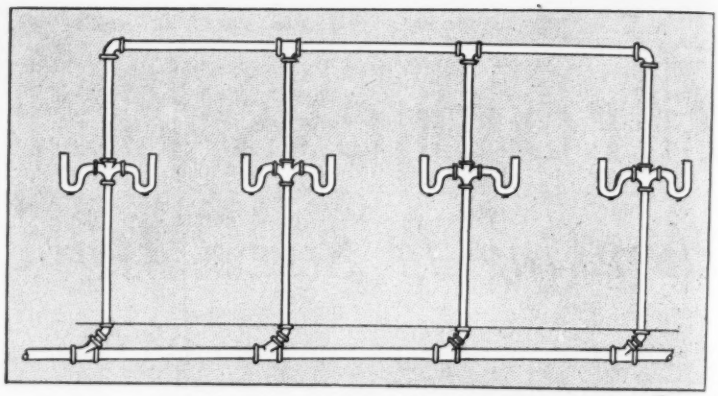
The pressure provided by the pumping system will vary from 75 pounds at the pumping station to 25 pounds at 39th Street, the southernmost limits of the Exposition grounds.

As is the case with exposition buildings and other features of Chicago's 1933 World's Fair, the sanitary sewerage system, the storm sewer system and the water pumping system are designed to provide adequate service during the life of the Exposition, which is 150 days. Because of the length of the grounds, a large amount of piping is necessary—the total for sanitary sewers, storm sewers and water pipes being about 26 miles.



Venting

a discussion of how to vent lavatories in the center of a given space . . . .



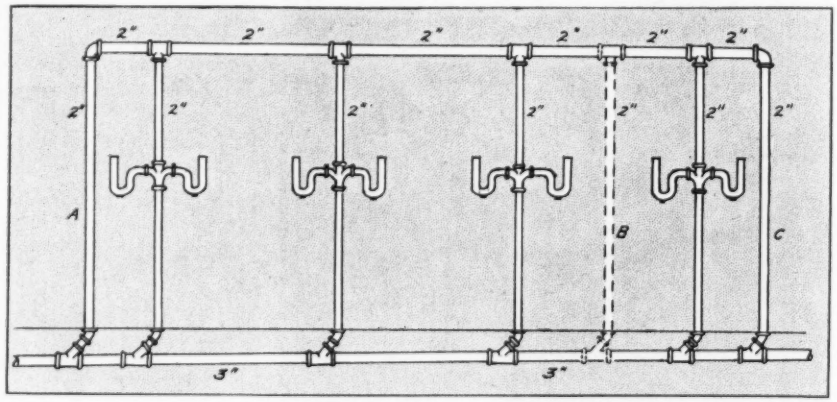


Fig. 1—Above

Fig. 2—Below

HERE is a case of a rolling stone gathering moss. In the last issue, we published an article on how to vent lavatories in the center of a room. Two methods were offered, one by a reader which proved to contain more venting than is necessary and a second by R. M. Starbuck. Now we have to offer still another set of connections which have been suggested by a reader in Chicago. His method may be said to be half-way between the two shown in the last issue. He says, "Your article on how to vent lavatories in the center of a room invites a discussion of this subject. The writer has added to your sketch, which was published as Fig. 2 (see Fig. 2 here) the lines necessary to show the waste and vent connections. It would seem unsatisfactory to continue the 3-in. lateral drain for the purpose of forming the vent connection marked "C" in Fig. 2, inasmuch as a stoppage of the lateral would undoubtedly cause a fouling of the vent which in time would be closed completely, thus leaving the battery unvented. The inclusion of a clean-out at the end of the lateral should be made, this of course, is understood as good practice and necessary.

"Since the passage of air in the vent pipe is essentially in the same direction as the illustration shown in your article in the December issue (Figs. 4 and 5, page 52) it would seem obvious to the writer that the highest point in the horizontal vent would be between vents "B" and "C," although there could be easily a difference of opinion if the theory were advanced that all vent pipes should rise away from their drain connections up to point "A."

"It appears to the writer that the most satisfactory answer to this entire question was also included in Fig. 4 on page 60 of the last issue (also shown here as Fig. 4).

"The writer wishes to express to you his appreciation for your numerous articles in DOMESTIC ENGINEERING and his only criticism is that they are not nearly long enough. Especially is it true when dealing with the larger projects. I would even prefer that more complete articles be divided into two issues if necessary."

It is recognized that there are almost countless numbers of ways to accomplish similar purposes. The subject of venting lavatories in the center of a room has not been ex-

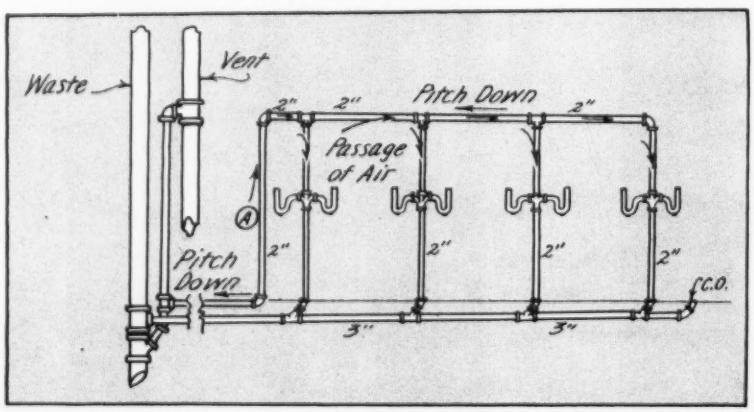


Fig. 3—Is at the left

. hausted, by any means, in this short discussion.

The final proof is whether or not the system under consideration will work as it is intended under all and any conditions. When this requirement is satisfied, the question then becomes one of whether or not it is as simple or as economical as other equally effective hookups. There is no question but what the system suggested by our Chicago correspondent, shown in Fig. 3, will vent satisfactorily. There are ample provisions for equalizing air pressures within the piping, thus preventing the siphoning of any of the traps. However, is the system shown in Fig. 3 as economical as it could be and still give the same measure of protection?

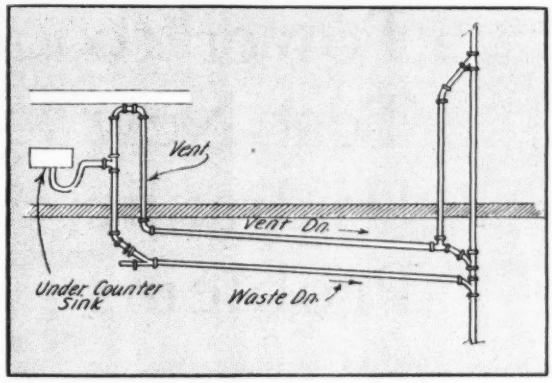


Fig. 4—Another method of venting

In answering this question, the function of the system might be considered. The fixtures involved are lavatories. The horizontal vent in Fig. 3 is shown above the top of the fixtures so that if there is any stoppage in any part of the drain, the water will overflow onto the floor before it rises sufficiently high to enter this horizontal vent. Therefore, why should it be necessary to rise again in connecting into the vent line of Fig. 3? It isn't. The purpose in rising to make a connection into the vent stack, above the highest fixture, is to prevent any possibility of drainage entering the vent stack as a result of stoppages in the drain. If this is already accomplished, there is no point in carrying the venting further. It is comparable to a man getting off of a street car, after he has got on, just so that he can get on again. There is no harm in it except that there is a waste of energy involved and in going through the operations he may fall and injure himself. Likewise, in adding more venting provisions to a system than are necessary, there is always the possibility of getting tangled and doing something that defeats the purpose of all of it.

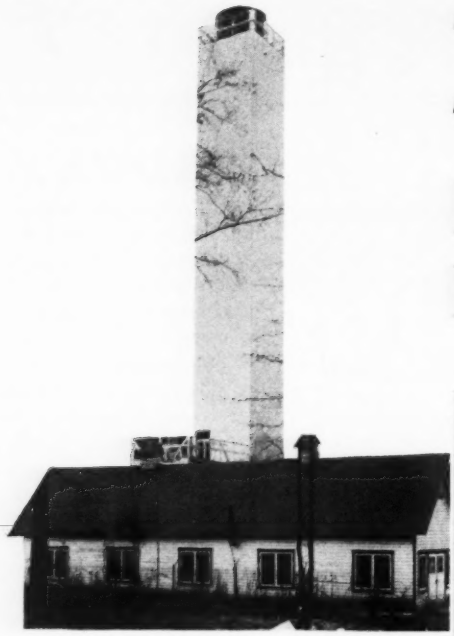
Accordingly, the recommendation is that the vent connection shown in Fig. 3 be carried directly into the vent stack. This eliminates the bottom vent connection into the waste stack and also the rise in the vent.

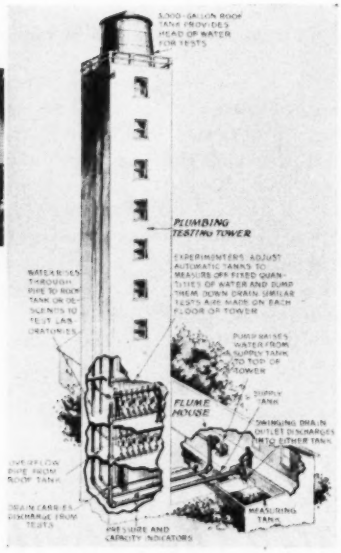
Watch the April issue
of DOMESTIC ENGINEERING

for a sales plan fitted to the times!

THESE are not times when the "blanket" campaign of past years can be undertaken. Neither are they times when any business man can sit still, doing nothing to create business. Watching developments closely, studying the problems of the retailer daily, gathering the experiences of readers, and completely forgetting ideas other than those which represent a type of merchandising fitted to the times, DOMESTIC ENGINEERING has prepared a sales plan that will work. It is based on a knowledge of what is happening and of what may be expected from alert plumbing and heating dealers. It will be completely set forth in our April issue —and we predict for it an enthusiastic acceptance from all branches of the industry. Watch for it! Use it!

Tower to Test New Hydraulic Problems



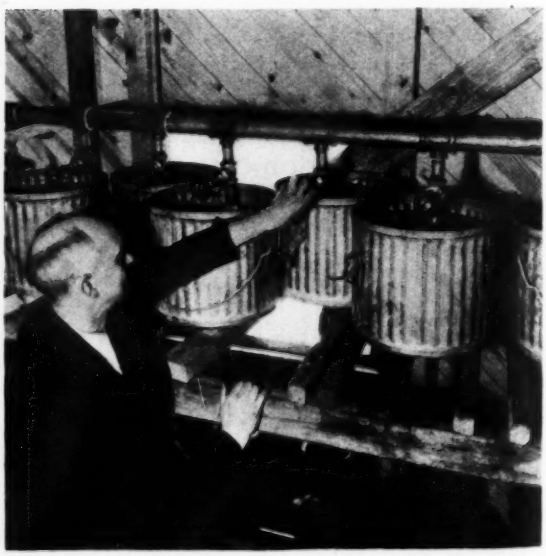


The great federal laboratory at Washington is fitted to make plumbing tests. The views show the building and a test under observation

THE Plumbing and Heating Industries Bureau has been working to establish a commodity division in the Bureau of Foreign and Domestic Commerce of the Department of Commerce for the plumbing and heating industries. The Bureau announces that a good start has been made, as there is now in Washington a Plumbing and Heating Products Unit to serve our industries.

This Plumbing and Heating Products Unit is in charge of an experienced official of the United States Department of Commerce, who is at the service of our industries. His function is to provide facts, data, and statistics already in existence, but which so far have not been made applicable to the plumbing and heating industries. In this way the plumbing industry has at its service the greatest hydraulic laboratory in the world. This is the National Hydraulic Laboratory, which has just been completed at the United States Bureau of Standards in Washington.

The National Hydraulic Laboratory was designed to combine under one roof the facilities for the greatest possible variety of hydraulic tests. Large expanses of unobstructed floor space, so that many different experimental set-ups can be installed without interfering with each other, and means for distributing large flows of water to all parts of the laboratory, measuring the water and returning it to the storage basins, were emphasized.



"Good Plumbing As Cheap As the Inferior Type"

Says Jere L. Murphy in this review of fifty years of progress

THE plumbers in the United States have in the past fifty years made it safe to install modern plumbing fixtures and modern plumbing piping close to a living or dining room. In fact, very often plumbing fixtures are installed in rooms directly adjacent to a living or dining room.

Fifty year ago in hotels, apartment houses and dwellings of all types it was considered bad policy to locate plumbing fixtures adjacent to living or dining rooms. Plumbing fixtures were then located in extensions of buildings or in the yards of the buildings. This was so because such fixtures could not be installed in the interior of buildings with safety to the health of the public.

The fact that this can now be done is in a greater measure due to the type of piping installation than it is to the fixture installation. While naturally there have been many improvements in the type and style of fixtures the changes have not been as revolutionary as in the piping systems that are connected with plumbing fixtures.

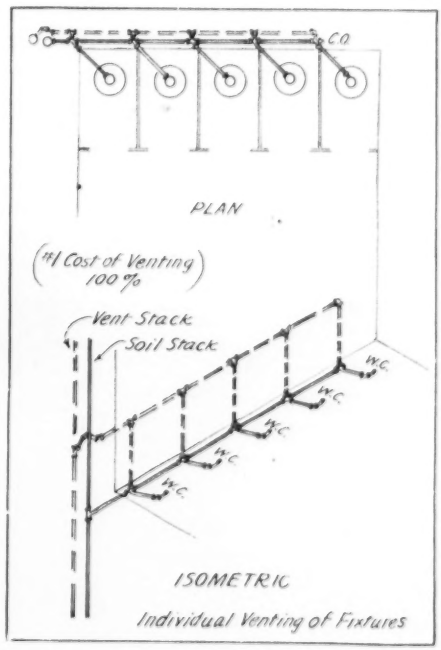
PLUMBERS RESPONSIBLE FOR SAFETY

Were it not for the fact that the plumbers of the United States made improvements on the piping systems it would not be safe, even now, to install our good-looking fixtures in the interior of buildings.

In recent years great improvement has been made in the finish of plumbing fixtures. Color has been added to porcelained, enameled and vitreous ware and the lines have been refined and made more graceful. As a result of this, the average buyer is influenced by the excellent appearance of these fixtures and neglects to find out if they are properly installed. It is essential for the manufacturers of plumbing fixtures to co-operate with the contractor to insure the proper installation of the fixtures to a soundly designed plumbing system.

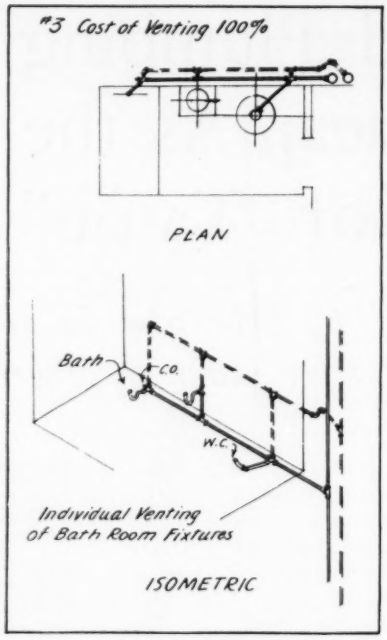
Very often good-looking fixtures are connected with a piping system that is not of the best design. This is exceedingly dangerous to the health of the American public, and too great an amount of care cannot be exercised in the selection of piping systems in the interior of buildings. Plumbers have created a demand for more and for better plumbing materials of all types. Real estate men, architects, and builders seek the advice of plumbers regarding the selection and type of materials of all kinds that go into plumbing systems, and justly so. The plumber has had experience with the different materials that go into a complete plumbing installation. His experience is far greater than that of the man who makes those materials. For, the plumbers receive all of the complaints and objections to those materials. In ninety out of every hundred cases the plumber is asked his opinion of those materials and it is his selection that is finally installed.

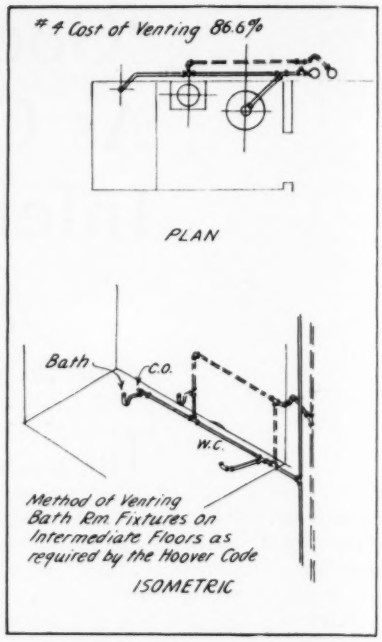
Next to the selection of the proper type of material for plumbing installations and the proper system for the plumbing installation is the inspection of plumbing. The former is of no value whatever if there are no good plumbing rules to regulate their installation in the cities, towns, villages and farming districts throughout the country. The best interests of the American public can be served only by a rigid inspection of plumbing installations. Plumbing is a health measure and it safeguards the health of the public. The removing of human waste materials from buildings is very important, and if it is not removed in a proper manner it will spread diseases of all kinds. Plumbing should be classified as a health measure.



Mr. Murphy compares this with plan at bottom of Page 40.

"Individual venting is not any more expensive than loop or circuit venting. The costs I have arrived at (in the accompanying drawings) are based on the present-day labor and material costs in New York City."

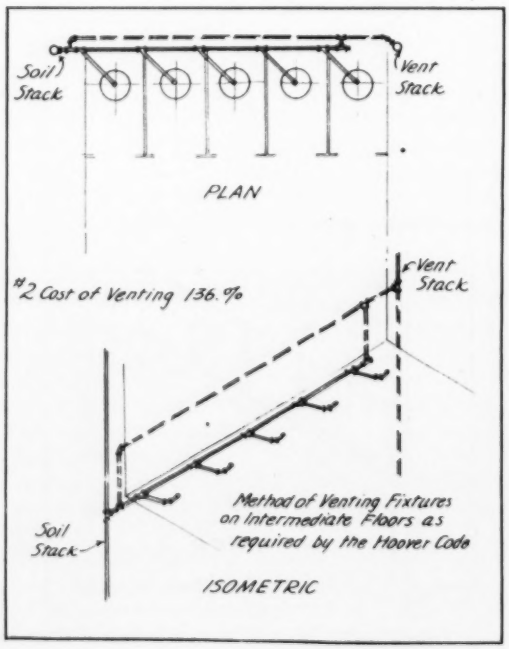




In the early "eighties" in New York City, plumbing was classified as a health measure and at that time was under the jurisdiction of the board of health. In those days the plumber was always assured of co-operation from the board of health in New York City and it was due to the fact that the superintendents of health looked on it purely from a health standpoint, and treated it as such. Good plumbing was looked on by the board of health as a precaution against many types of serious diseases.

While now in a great many of the larger cities the building department is in charge of plumbing installations in buildings, I believe the best interests of the American public would be served if plumbing were under the jurisdiction of the board of health. Politics do not mix in or mingle with cases of scarlet fever and other contagious diseases. Plumbing is subject to the whims and caprices of politics when it is in charge of the building departments. There is no doubt in the mind of any American but that good plumbing is responsible for the good health that the American public enjoys. If that is so (and it is) there is no reason why we should not protect good plumbing. There should be rigid plumbing rules and regulations in every American community. There should be proper inspections of plumbing to see that those plumbing rules and regulations are carried out. After all, plumbing rules and regulations are of no value if not followed by proper inspection and care. It is the writer's opinion that the proper authorities to take care of these inspections are the health authorities governing the locality in which the plumbing is installed.

Plumbing is highly technical as well as mechanical, and it should be supervised and inspected by men with a technical as well as a mechanical knowledge. The owners of buildings and architects should be informed as to the best systems of plumbing before designing their buildings. They should be told of the importance of the proper installation of plumbing piping. They should also be informed of the fact that, if the plumbing system is not properly installed when the house is built, it is liable to cost a great deal of money a short time thereafter to remove the poorly designed plumbing piping. It is not alone the cost of removing the improperly designed plumbing piping but a case of removing floors and walls



"My idea of venting is that no pipe conveying air, to protect the seals of traps against siphonic action or back pressure should convey liquids of any kind. The pipe should be used exclusively for air." Two methods of venting with their relative costs in percent, are shown in the several drawings.

to get at the poorly designed system. In other words, a few extra dollars spent in the average dwelling will save hundreds of dollars during the life of the plumbing system.

The board of health should have charge of the water systems in properly constructed buildings as well as the waste and vent systems, because it is very important that water systems are properly installed. It is very important that fixtures are used which will not contaminate either the hot or the cold water. It is also important that hot water is installed in such a manner that immediately upon the opening of a faucet you can get a bountiful supply of hot water. If the fixtures are not flushed properly with cold water it is just as dangerous to the health of the people residing in the building, as though the waste and vent pipes were not properly connected.

PLUMBING IS A HEALTH MEASURE

It is about time that the American public be educated to the fact that plumbing should be looked on purely as a health measure, and that it is a fact in very large communities such as very congested cities, the death rate is very low, whereas in some rural districts where plumbing is not as well supervised, well planned or well executed as it is in the larger cities the death rate is high. I believe that the plumbers of the United States should educate the public to be more "good plumbing minded," for surely every man who lives in a house or a building of any type is very much interested in his own health and the health of his family. It is a well known fact that good plumbing is about as cheap as the inferior type of plumbing. It is only a question of good plumbing regulations and good systems of inspection. And both can be had from the plumbers throughout the United States, if they are taken into the confidence of the public. I am speaking from experience in the plumbing business. However, if I were to build a house tomorrow and knew nothing about plumbing I would want to advise with the plumbing contractors in the vicinity in which I was building my house, the same as I would advise with my physician when my family or I were in poor health.

I would like to impress on the manufacturers of all types of plumbing materials the fact that the gospel of good plumbing, good fixtures, good piping, etc., is being spread throughout the United States by about forty thousand trained salesmen in the plumbing industry, who are working for plumbing contractors. Were it not for those forty thousand men industriously engaged in selling all types of plumbing materials, including installations, we would not have progressed as much as we have up to the present time.

THE PLUMBING CONTRACTOR'S RECORD

The average manufacturer of plumbing materials and the average salesman, working for the manufacturer or jobber of plumbing materials, do not sell the materials. The contracting plumber sells the materials. He is the fellow who gets out on the highway and byway and sells, sells, sells. He is the fellow who gets the check and turns it over to the wholesaler and manufacturer. He is the fellow who has spread the gospel of good plumbing. He

(Continued on page 50)

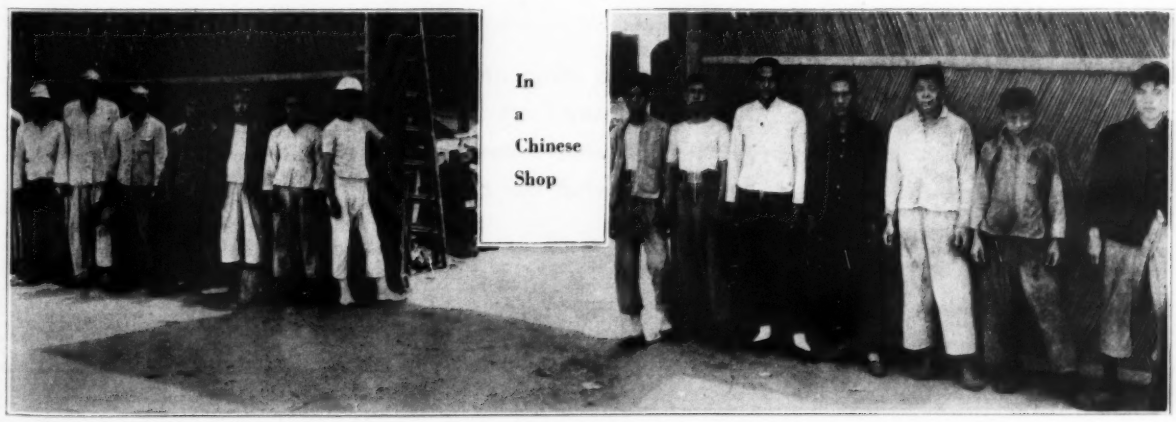
China Makes Progress in Sanitation While Civil and Foreign Wars Rage

CHINA takes her place in world's news much more frequently from a military than a sanitary point of view. Proud owner of the title of founder of a civilization when western nations were still barbarians, accustomed to conveniences and luxuries which amazed the first visitors from Europe, China has stood still while the Occidental world caught up and passed her.

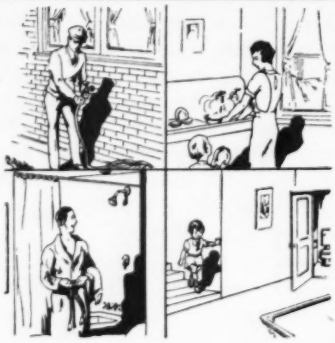
Today, military events are keeping all eyes on China, but in the long future it is possible that the slow, steady and unheralded progress in sanitation may have a more far-reaching effect on the future of the Chinese people.

The accompanying photograph, sent DOMESTIC ENGINEERING by a reader and correspondent who has lived for many years in Manchuria, is a view taken in a Chinese plumbing and heating shop in Shanghai. The slow rise of sanitary standards in the Far East calls for a type of workmen unknown in the old Orient. These men are learning how to install modern plumbing and heating.

With the world's largest nation as a potential customer, one would assume their choice of a business was an exceedingly wise one.



In a Chinese Shop



Plumbing For Spring Comfort

WITH the coming of spring, convenience demands that plumbing needs around the home be looked into. Conveniently placed hose cocks, water heating equipment of the automatic type, modern shower equipment, and a basement toilet are among the more obvious things which will help you make the spring fever season a little less trying. It's a good time to have an inspection made of the entire plumbing system to see that everything is in good shape after the winter strain. A telephone call will bring a competent man to make the inspection; or to talk to you about modernizing your present plumbing arrangements.

(In this space Your Name, etc.)

A single-column plumbing ad

The cut for this plumbing ad may be bought for 35c—or an order may be placed for six at $2.10 or twelve at $4.20—one new cut a month to be sent you.

My dear Madam:

We are facing the milder days of spring—those days when the balmy weather, after the severe winter temperatures, awakens that listless feeling which makes many a task seem a hardship.

At such times inconvenient household equipment becomes an annoyance that reduces comfort well below the minimum. If, for example, you are dependent for hot water on a piece of equipment in the kitchen—the little old tea kettle for instance—the added heat increases discomfort. Hot water should be furnished in quantities from an automatic water heater located in the basement so that all you need to do is turn the faucet handle.

There are many other plumbing improvements which will make spring and summer more pleasant. For example, few homes have a sufficient number of hose cocks, conveniently located, so that the task of watering lawn or flower beds will be accomplished without having to drag the hose all over the place.

In addition to this, shower bath equipment will be a great help in keeping members of the family at the peak of efficiency—without the long waiting necessary where there is more than one person who wishes to bathe before starting for work in the morning. Another very great convenience is a basement toilet for the use of children so that they may come in from play without the necessity for tramping through the house.

We'd be glad to talk over any such improvements with you. You will find prices quite low and the values to be had higher than they have ever been before. Just telephone.

Very truly yours,
HARRY BROWN

A plumbing sales letter

LOOK TO PLUMBING "DOCTOR" FOR SPRING FEVER CURE

"Pretty soon," says Harry Brown, local plumbing contractor, "we'll be in those days when it seems too much trouble to yawn—we'll all be afflicted with spring fever.

"It makes the day's work seem a punishment, and I know of only one way to overcome it. If a man will jump under a brisk shower bath the moment he's out of bed in the morning; and if he will repeat the treatment in the evening before he sits down to his dinner, he will soon find that spring fever has no terrors for him. He may even come to say that his success over his rivals in business is due to his conquest of spring fever by the shower method.

"Shower equipment can be added to present bathing facilities quickly and inexpensively, and the prescription will be found to be one hundred percent efficient."

Hand this publicity item to your newspaper.

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING—without charge.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

Plumbing For Home Convenience

Spring and summer bring their own demands upon the energies of those who are maintaining their own homes. During these seasons they will find that up-to-date and convenient plumbing equipment will do a great deal to make things more comfortable. Another hose cock or two, automatic water heating equipment, shower bath facilities—these and similar additions to the present plumbing arrangements will be conducive to a larger measure of comfort and convenience. Prices are quite low now and resulting values better than they have ever been before.

(In this space Your Name, etc.)

A single-column plumbing ad

SERVICE

Dear Madam:

Now we have March with us--the traditional "lamb and lion" month.

Whether the month does come and go as they say it does, this much is certain. It is seldom warm enough so that the home may be without a fire--and with the average heating plant it is seldom possible for the housewife to have just enough heat to keep the house comfortable on a mild day. Usually it will be up around 80--with windows and doors open and the resulting waste of fuel. Also, it is anything but comfortable.

That wasted fuel, and that loss of comfort, may be eliminated if the heating plant is equipped with modern automatic controls. Then, when it is necessary to raise the temperature of the house only a few degrees, there will be no excess heat being delivered to make the house unbearably warm.

Not only during the "in-between" heating seasons in spring and fall will such controls operate to bring greater comfort and to save fuel. During the heavy heating months the house temperature will be kept even, with small fluctuations, and with a resulting lessening in colds among the members of the family. It is, of course, the violent fluctuations in temperature which contribute to the production of colds.

Hence, on the score of economy, comfort and health the installation of automatic controls is a good investment. Just telephone and let us arrange to add this comfort to your home. Terms can be arranged if desired.

Very truly yours,
HARRY BROWN

A heating sales letter

When You Need Only a Little Heat

This month and next you will have many days when a very little warmth will serve to make the home comfortable. If you have a heating plant without modern controls, you know that on those days the house is going to be overheated. With automatic control—and automatic fueling, too, if that is possible—you will find it possible to secure just the little added heat necessary to make the house comfortable, without overheating and waste in fuel. If you will telephone we'll send a man to explain just how such money-saving and comfort-producing controls work.

(In this space your Name, etc.)

For newspaper ad or blotter copy on heating

Note how the copy on each of these two pages dovetails. The ad copy, the sales letter, the publicity item—in each case they help each other. Use them in your efforts—and send us copies.

"LAMB AND LION" MONTH MAKES HEATING STEW

"This month of March," says Harry Brown, local heating contractor, "makes a fine mess of a lot of heating systems. Today you have to protect the house against a temperature that's low enough to chill, tomorrow you have to furnish just enough heat to make up the difference a few degrees because the temperature has gone up again.

"With an old-fashioned, hand-fired heating system that's about as easy as throttling a racing car down to five miles an hour—it can't be done. Those old systems were designed to meet Old Man Winter in his worst moods. They weren't planned to meet him when his mood is mild. But modern controls will meet that problem—automatically—and with a saving in fuel along with greater comfort."

A piece of heating publicity

MARCH is the month of the "lamb and the lion." It rages one day, and is so mild the next that you need only a very little warmth to keep the house comfortable. With modern automatic controls this is taken care of without trouble. The controls call for just enough heat and in that way keep down fuel waste and promote greater comfort. The saving in fuel will be noticeable; and the added comfort will be more than noticeable. Just telephone—we'll send a competent man to tell you about it.

(In this space Your Name, etc.)

A single column heating ad

The cut for this heating ad may be bought for 35c—or an order may be placed for six at $2.10 or twelve at $4.20—one new cut a month to be sent you.

Questions from Readers are ANSWERED by our Engineers and published in this section

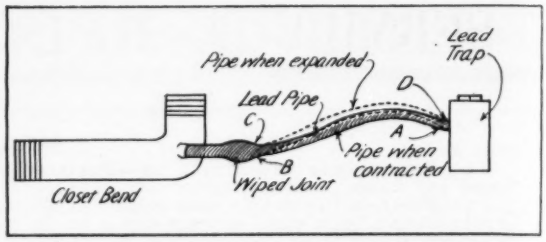


Fig. 1

Why Did Lead Pipe Crack?

To the Editor:

Recently I was called on a repair job involving lead work. The bath waste drain was leaking and had ruined the ceiling of the dining room below. Finding the leaks, I was surprised at the cause. The end of the lead pipe, which was wiped on a soldering nipple and screwed into the closet bend, was cracked open three-quarters around and the connection at the lead trap was the same. I would like to know the cause of these breaks. The house has been built fifteen years and the people had no trouble till about a month ago.

Detroit, Michigan. H. W.

To the Reader:

There are several possible causes for this occurrence. You have not given us sufficient information to say conclusively that it was one cause and not another.

However, we are very strongly of the opinion that contraction and expansion in the lead pipe operated to bring about the breaks. Our reason for believing this is that as you have sketched the pipe, it was installed in the form of a bow. When hot water was discharged into it, the metal expanded to increase the length of the bow as indicated by the dotted lines in the accompanying sketch marked Fig. 1. The closet bent connection evidently was rigid as was the connection to the lead drum trap with the result that the pipe itself was forced to stretch on the underside at the points marked A and B. While this contraction and expansion might show unappreciable effects, it must be recognized that this has gone on over a period of 15 years. If the cracks had occurred on the top of the pipe at points C and D, then this reasoning would not apply.

We had occasion to discuss your problem with Mr. Claffy, who is the Chief Plumbing Inspector of the City of Chicago, and he pointed out that he knew of cases where concrete or tile floors had acted upon lead work to cause breaks. However, he observed that in most cases coming to his attention, the action had occurred just below the top of the drum trap where the access plate was on a level with the tile floor. He also cited instances where breaks had occurred in lead piping due to electrolysis. In this case, stray currents of electricity would reach the lead pipe line at certain points and cause the action which later resulted in leaks. Another point is that of crystallization of the pipe. When this occurs, the pipe becomes brittle.

The chemical department of the National Lead Company advises us that ammonium or sulphate compounds coming in contact with lead work will cause this crystallization if they are allowed to remain in the piping for any length of time. It was pointed out that in using certain chemicals for opening clogged lead waste lines, care should be exercised to wash out the chemical thoroughly after the line is open if all possible crystallization is to be avoided.

As we have already pointed out, we believe that the case you mention was caused as a result of expansion and contraction of the pipe itself. We merely mention these other causes to indicate to you what also might have occurred.

How Much Heat from Pipe Coils?

To the Editor:

Will you be kind enough to furnish us with information on the installation of ceiling radiation in steam, water or vapor vacuum heating plants?

Do you increase the amount of radiation when the radiator is placed on the ceiling? What is the usual percentage to increase the radiation to give 70 deg. Fahr. heat in a room?

N. J. E. S. S.

To the Reader:

The American Society of Heating and Ventilating Engineers Guide (1932, Page 99) states that the heat emission of each pipe of ceiling coils placed horizontally (pipes horizontal) is equal to that of a single row coil of wall radiation. The following table gives the heat emission of different sized single row pipe coils. However, it is pointed out that allowance must be made if the coil is at the ceiling in a higher temperature than that upon which the following table is based, namely, 70 deg. Fahr. The Guide states that the common practice is to allow 126 Btu., 156 Btu. and 175 Btu. per linear foot of pipe, respectively, for 1-in., 1¼-in. and 1½-in.

If you have not already done so, we should suggest that you write to the University of Illinois, Engineering Experiment Station, and obtain a copy of Bulletin No. 223. The price is 55 cents per copy. On page 30 there is a chart which shows the effect of placing wall radiation at the ceiling. This effect is illustrated in relation

Presenting

an ADDITION

to the PENBERTHY Line of AUTOMATIC ELECTRIC SUMP PUMPS

THE Model "33" brings to the low-price field a standard of quality that is unexcelled. This quality, together with the retail price of only $39.50, will enable the plumbing trade to get business against the competition of other types of outlets that have only the appeal of low price.

The same organization and facilities that produced Penberthy Automatic Cellar Drainers and Model "K" Automatic Electric Sump Pumps (pre-eminently the finest units of their kind), have given the Model "33" pump the "Points of Distinction" shown at the right.

The Model "33" Pump is made in one size only for sump depths from 10" to 24"; its maximum capacity is 1400 g.p.h. and current characteristics are as listed. When deeper sumps, greater capacities, or other current characteristics are required, we recommend the use of Penberthy Model "K" Automatic Electric Sump Pumps which are made in five sizes and are also carried in stock by jobbers everywhere.

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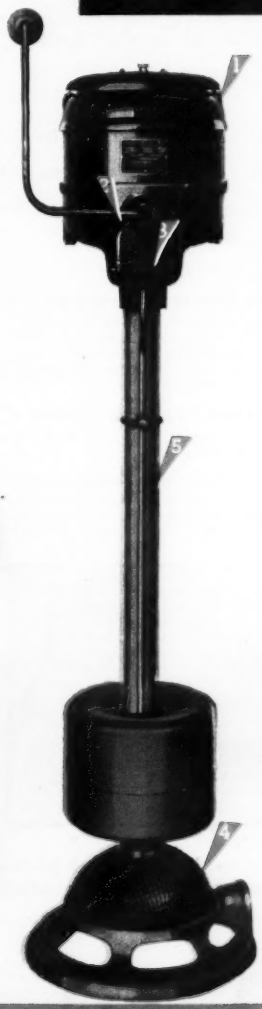

POINTS OF DISTINCTION

1. MOTOR—½ h. p. with oil sealed ball thrust bearing for vertical operation. Exceptionally rugged construction and free from radio interference. Current: 110 volts, 60 cycles; 220 volts, 60 cycles optional.
2. SWITCH—double silver contact. All parts mounted on heavy bakelite plate and protected within housing integral with motor end bell.
3. CIRCUIT BREAKER—alloy melting type integral with switch mechanism. Protects motor against damage from overloading or improper voltage by automatically cutting off power; reset by simply pushing button.
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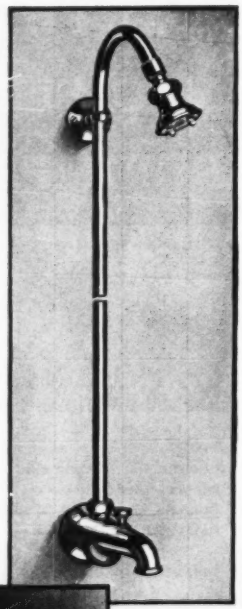
5. IMPELLER SHAFT—bronze, fully enclosed and protected against vibration by two Oilite bearings. Lower end has special adjustable pivot that prolongs bearing life.
6. RUGGED CONSTRUCTION assures long life and satisfactory operation; there are no protruding arms or levers to bend and get out of order.
7. COPPER & BRONZE THROUGHOUT—it is immune to corrosion.

PENBERTHY INJECTOR COMPANY

DETROIT, MICHIGAN — *Manufacturers of Quality Products Since 1886* — WINDSOR, ONTARIO

BUILD ON ROCK



● The plumbing contractor who builds a reputation for selling and installing Crane materials *builds on rock.*

Under his business stands a solid foundation, an unchanging policy of belief in him, recognition of his importance in every transaction, and co-operation with him.

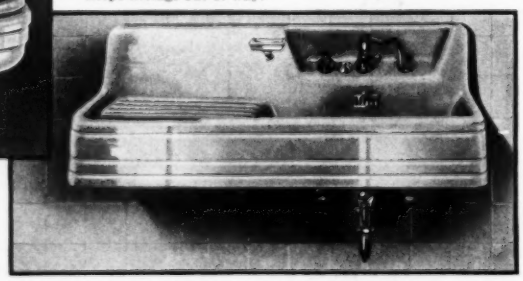
Today, as in the past, Crane Co. backs up the plumbing contractor.

More, Crane helps to protect the contractor against cut-prices and cheap competition by creating distinctive and exclusive materials *which cannot be purchased elsewhere.*

C-4344-B
Addenda Shower Combination
Modernizes antiquated installations, quickly, economically, attractively. A Deviator spout simply replaces the old overrim spout. Head needs only a minimum of 10 pounds pressure. Easily cleaned, without tools.

C-10384—Crane Siwelclo Siphon Jet Closet
Recognized as most efficient and hygienic. Quiet acting. New curved rim and seat. Shelf-top tank.

C-19175-LP—Crane Corwith Enameled Iron Sink
In regular or acid-resisting enamel. Box back, 8 inches high, provides shelf. 8 inch apron. 8 inch deep sink, with overflow and 7 inch Dual Strainer for washing dishes. Patented recess keeps fittings out of way.



The Corwith sink with its patented recess and other features, the quiet Crane Siwelclo closet with its modern curved seat, the Addenda Shower Combination with its exclusive Refreshor head . . . these are but three examples of materials that will help you now to create business that has no competition.

● ***The importance of the Plumbing and Heating Contractor is more evident than ever before and you can count on Crane co-operation now, as always, to help you turn 1933 into a better year.***

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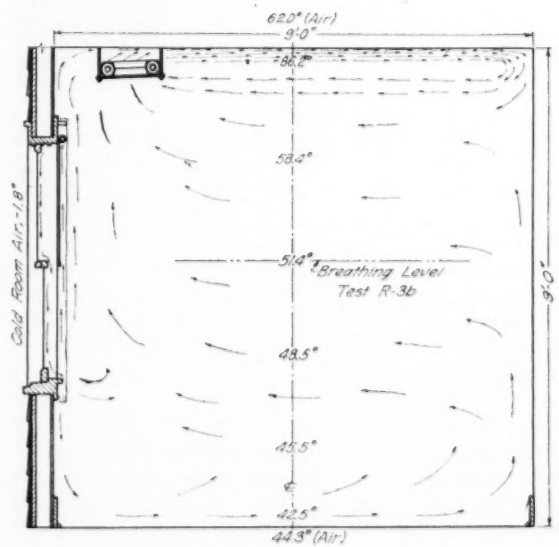
Table 2

Heat Emission of Pipe Coils Placed Vertically on a Wall (Pipes Horizontal Containing Steam at 215 deg. Fahr. and Surrounded with Air at 70 deg. Fahr.)

Btu. per linear foot of coil per hour (not linear feet of pipe).

Size of Pipe	1-in.	1¼-in.	1½-in.
Single Row	132	162	185
Two	252	312	348
Four	440	545	616
Six	567	702	793
Eight	651	796	907
Ten	732	907	1020
Twelve	812	1005	1135

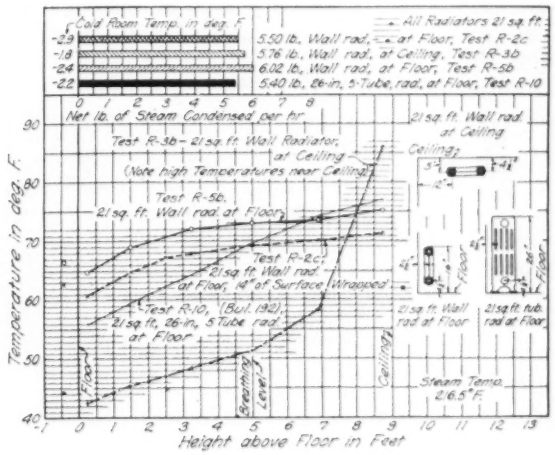
to the effect produced by the same radiation placed on the wall, and column radiation also placed on the floor at the wall. The temperatures of the air at various levels are compared. At the ceiling, the temperature is 86, 75 and 71.5 deg. Fahr. respectively for the ceiling, wall and column radiation. At the 5-ft. of breathing line, the same radiation gave 73, 69 and 51.5 deg. Fahr. while at the floor the respective temperatures were 65, 61 and 42.5 deg. Fahr. Page 89 of this bulletin shows by air currents how poorly heat is distributed in a room when the radiator is located at the ceiling. To quote: "In the case of the wall type of radiator located near the ceiling, most of the air movement was confined to a very thin sheet of hot air at the ceiling. The circulation in the balance of the room was erratic and the cold air from



the windows reached the floor. Hence the floor was very cold, the air near the ceiling was hot, and the room was underheated and decidedly uncomfortable."

From this, it is apparent that radiation placed at the ceiling is not at all desirable and should be avoided whenever possible. However, when it cannot be avoided, the data contained in the first paragraph of this reply should serve as the basis for working out a satisfactory installation. For instance, suppose you figure the heat requirements of a room and find that they amount to 14,400 Btu. per hour. If your pipe coil is made up of 1¼-in. pipe, then you would divide 14,400 Btu. by 156 Btu., which is the heat given off by one linear foot of pipe, or,

$$\frac{14{,}400}{156} = 93 \text{ linear feet of pipe needed.}$$


Cold Room Temp. in deg. F
-23
-18
-24
-22
All Radiators 21 sq. ft.
5.50 lb. Wall rad., at Floor, Test R-2c
5.76 lb. Wall rad., at Ceiling, Test R-3b
6.02 lb. Wall rad., at Floor, Test R-5b
5.40 lb. 26-in. 5-Tube rad., at Floor, Test R-10
Net lb. of Steam Condensed per hr.
21 sq. ft. Wall rad. at Ceiling
Test R-3b – 21 sq. ft. Wall Radiator, at Ceiling
Note high Temperatures near Ceiling
Test R-5b.
21 sq. ft. Wall rad. at Floor
Test R-2c.
21 sq. ft. Wall rad. at Floor, 18" of Surface Wrapped
Test R-10. (But. 132).
21 sq. ft. 26-in. 5 Tube rad. at Floor
Temperature in deg. F
Floor
Breathing Level
Ceiling
Steam Temp. 216.5° F.
Height above Floor in Feet

Column radiation standing on the floor, as you know, emits 240 Btu. per hour, so that the amount of this radiation need equals,

$$\frac{14{,}400}{240} = 60 \text{ sq. ft. of column radiation needed.}$$

All of this is in regard to steam temperature. In the case of hot water temperatures customary and proportional correction must be made.

Hot Water Pipe Bursts First

To the Editor:

Please tell me why a hot water pipe will burst before a cold water pipe, both being exposed to the same degree of cold.

Franklin, Ind. W. E. W.

To the Reader:

The theory advanced is that the ordinary water supply contains a large amount of air. No doubt you have observed that under extreme conditions when water is drawn from a faucet into a tumbler, it is milky as a result of the air bubbles that are formed when the pressure is released. This milkiness clears up of course, as soon as the bubbles rise to the top and break through the surface to the atmosphere. However, this does not mean that all of the air has been exhausted from the water. As proof, recall what happens when this same water is heated. Even before the water comes to a boil, bubbles collect on the bottom and sides and rise to the surface of the water.

To apply this to your question, the water in the hot water piping is free of air, whereas the water in the cold

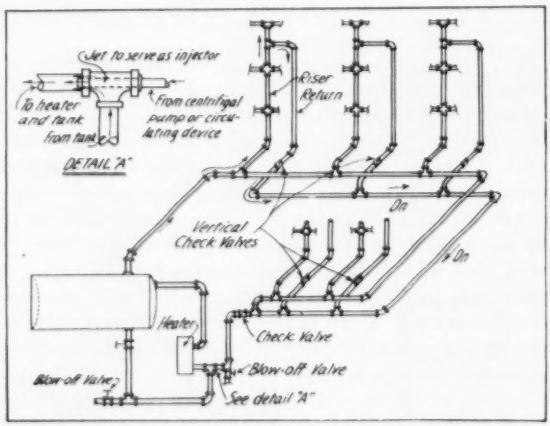
water piping is in its raw state and contains air. Accordingly, when the water in the cold water piping freezes, the air slows down the freezing action. It is well to note that exact process of freezing when the water contains air, mineral matter, or suspended solids. As soon as the water reaches the freezing point, crystals of pure ice begin to form. These crystals are small and contain only pure water. Small amounts of air, mineral matter and suspended solids are caught and held between the pure ice crystals during the process of freezing. The formation of ice in this manner gives it the opaque appearance.

Coupled with this fact, it should be remembered that freezing takes place from the outside so that ice forms first, next to the pipe. When air is present in the water as in the case of the cold water system, this layer of ice contains air bubbles or dead air spaces and these act to reduce the conductivity of the ice just as dead air cells in building insulation act to reduce the flow of heat. It is understood, of course, in order for water in piping to freeze, the heat in the water must pass out through the piping and to the surrounding air. When a layer of ice forms, additional heat from the water at the center must pass out through this layer of ice and through the piping if more water is to freeze. It is obvious that these tiny dead air spaces in the frozen raw water slow down the transfer of heat from the inside water to the outside air. Incidentally, when a pound of water is at a temperature of 32 deg. Fahr. and when it freezes so as to form ice at 32 deg. Fahr. it gives up 143.33 Btu. Also, it should be remembered that there is heat in ice. On the absolute scale, the temperature of ice is 491.6 deg. Fahr.

We do not know of any laboratory data which indicate to what extent these air cells in frozen raw water retard the flow of heat from the unfrozen water to the surrounding air. Certainly, the effect would be variable depending upon the amount of air intrained.

Summarized briefly, hot water pipes burst first because of the absence of air in the water, thus allowing the water to freeze more quickly than raw water which contains air. Years ago, distilled water was used entirely in order to prevent foreign matter and air from being frozen into the ice cake.

Fig. 1—Here is a suggested set of connections



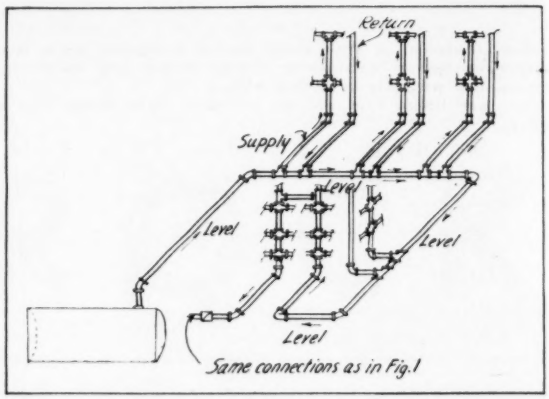


Fig. 2—This is a modification of Fig. 1

Problem in Circulating Hot Water

TO THE EDITOR:

I would like you to suggest some solution to a problem which came up before us recently.

From a hot water storage tank the hot water supply main runs completely around the cellar of the apartment house but pitches down away from the tank. The circulation from the riser to the fixtures runs next to the main and pitches the same way. The hot water did not circulate so we changed the pitch of the main and the return so that the supply main rises upward from the storage tank and the return circulation main falls down back to the storage tank. The circulation was taken out of the risers below the tee of the highest fixtures so that the risers are vented. We believe that the risers in the walls run up and are not trapped, but we cannot tell because they are concealed. The hot water does not circulate even with the change that we made on the mains.

Could you suggest what might be done under the circumstances?

Brooklyn, N. Y. A. H.

TO THE READER:

From what you have told us, we assume that the system as you found it originally, was as is outlined in Fig. 1. There is no question but what you encountered a case of reversed flow. That is, when a faucet was opened, there is no doubt but what cold water was drawn through the return piping instead of the warm water being drawn from the supply and storage tank. If feather-weight vertical check valves had been installed at the bottom of each return riser, it is quite likely that the system would have functioned correctly. That is to say, when a faucet was opened, the cold water in the return would have closed the check valve and the only supply available then would have been from the supply main of the hot water storage tank. From the fact that you mention no check valve, we assume that none was installed.

We mention feather-weight check valves hung vertically insomuch as gravity circulation in a system of this kind is a very delicate thing and does not require much resistance to stop it.

The most positive solution to your difficulty is that of installing a centrifugal pump or circulating device at the point marked A in Fig. 1. A detail of the connections is indicated in Detail A. You will see here that a pipe

Wrench—get busy!

. . . RUST-PROOF HOT WATER TANKS ARE HERE!

(RANGE BOILER)

• *New "Whitehead" Monel Metal Hot Water Tank (Range Boiler). Rust-proof...corrosion-resisting...tested to pressures up to 400 lbs. Handsome silvery finish.*

CLEAN, RUST-FREE HOT WATER.. NOW EASY TO HAVE

New

MONEL METAL HOT WATER TANK

• This full page advertisement appears in the March 4th Saturday Evening Post and March 25th issue of Collier's, reaching close to 6,000,000 families. How many of these readers will buy Monel Metal equipment from you? That depends on how closely you tie up with the Monel Metal campaign. The coupon brings you all the help you need.

● Wake up, pipe wrench, your lazy days are over. From now on your yawning jaws are going to be plenty busy!

Why all this sudden activity, hey? Well, if you must know, it's the new Monel Metal Hot Water Tanks. Right! Range boilers made of the same silvery Nickel alloy as those popular new kitchen sinks. In other words, range boilers that are absolutely rust-proof, corrosion-resisting, strong as steel. Built to give customers an unfailing supply of clean, crystal-clear hot water for years to come.

Get the idea? Men and women are going to see these tanks and say: "Just what we've always wanted. No more rust-rings in the bathtub and sink. No more ruined linens in the laundry tub." But first—they're going to read about Monel Metal range boilers in The Saturday Evening Post and Collier's! Striking, full page advertisements are going to tell nearly 6,000,000 people that Monel Metal hot water tanks are now being made, and that they are sold by leading plumbers!

So get ready, wrench, to do your stuff! First ad appears this month. Coupon brings dealer helps and further information.

•

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET, NEW YORK, N. Y.

Monel Metal

C O U P O N

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

Please send further information about Monel Metal Hot Water Tanks and Water Heaters.

Firm Name.....

Your Name.....

D.E.-3-33

Address.....

is fitted into a bushing and this serves as an injector for directing the return water into the heater and at the same time causing circulation in the storage tank circuit. Cases are on record when the tendency for reversed flow in the returns has been great enough to overcome the force of the circulating device. Therefore, it is necessary to obtain equipment sufficiently large to prevent this.

One engineer whom we consulted on your problem suggested the hook-up illustrated in Fig. 2 as being the best he knows of for this class of work. You will note here that the return for each riser is connected back into the main supply. Also, the supply is level. In the event that the opening of a faucet causes a reduction in the pressure in the supply riser so that water is furnished through the return, this return water comes out of the hot water main. Accordingly, there is no danger of obtaining cold water through the hot water faucets as long as there is hot water in the main. The check valve at the end of the supply line is designed to prevent a back flow.

You will note a loop at the end of the supply line which is formed by connecting the tops of the last two risers. The purpose of this loop is to form a head for gravity circulation.

In conclusion, it would seem that the easiest way of correcting this installation is merely to install the necessary circulating device for forced circulation.

Questions Which Are Answered by READERS

The following question was asked in the January issue, and the following answer is by a reader:

It is the intention to install 3 two-hundred gallon indirect water heaters on the side of a steam boiler. The total heating load on the boiler for radiators, piping, etc., is 3,000 sq. ft., E. D. R. exclusive of the indirect heaters. How much additional allowance would you make in the boiler load—if any—to allow for the indirect heaters?

IT is impossible to heat water from a steam boiler without at the same time adding to the load carried by the boiler. Whatever heat is absorbed by the water in heating must be supplied by the steam boiler in addition to the heat which it must supply to the steam system and this water load must never be neglected in calculating the size of the boiler. The whole science of engineering proves that no one can get something from nothing and this particularly is true in heating where the boiler in the end must generate every heat unit received from the heating system plus a generous additional amount for losses from the piping and up the chimney.

If each of the three indirect heaters is rated as supplying two hundred gallons and if this rating is based on a water temperature of 100 deg. Fahr. in three hours, then the quantity of water heated in three hours will be

200 gal. × 3 or 600 gal.

and, if this water is heated 100 deg. Fahr. the Btu. required will be

600 × 8⅓ lb. × 100 Btu. or 500,000 Btu.

But, since this number of Btu. will be required over a three-hour period the number of Btu. during a one hour period will be

500,000 Btu. /3 or 166,667 Btu.

This may be changed to equivalent square feet of direct radiation (E. D. R.) by dividing by the number of Btu. in one square foot of E. D. R., which is 240 and this gives

166,667 Btu. / 240 or 695 sq. ft. E. D. R.

and this amount should be added to the load on the boiler to obtain the total boiler load giving

2,000 sq. ft. plus 695 sq. ft., or 2,695 sq. ft.

It should be noted that this additional load would be the same no matter if the water is heated by indirect heaters, by a steam coil in the hot water tank or by a coil in the firebox of the boiler *provided* that the water was being heated at the same rate.

A simple rule-of-thumb which often is used in quick calculating is to allow 3½ sq. ft. E. D. R. as the additional load on the boiler for each gallon of water heated per hour. In the above case the three heaters were rated at 200 gallons each during a period of 3 hours so that the hourly heating was some

200 gal. × 3 heaters /3 hrs., or 200 g. p. h.

and using the rule-of-thumb of 3½ sq. ft. to a gallon gives

200 × 3½ sq. ft. or 700 sq. ft., E. D. R.

which it will be seen compares very closely with the amount of 695 sq. ft., E. D. R. obtained by the more exact method.

How Would You Answer This Question?

Can you explain where the top of the Hartford loop should be placed in relation to the boiler water line? Why?

Answers based upon your experience, suitable, will be paid for and published in the May issue.

50 Years—

(Continued From Page 41)

is the fellow who has written good plumbing codes. He is the fellow who has brought plumbing from where it was a menace fifty years ago to install it in the interior of a building to a point where it is safe to install plumbing in a bedroom, living room or dining room or adjacent to a bedroom, living room or dining room.

The progress of plumbing can go ahead only by the education of the American public to the advantages of good plumbing and the co-operation of the manufacturer, wholesaler and plumbing contractor. The average plumbing contractor is not alone a good salesman but he has a great deal of money invested in his business. He has a tremendous amount of expensive tools and equipment of all kinds such as scaffolding, hoisting equipment and very often large stocks of materials. Also, he has engaged many trained salesmen, trained superintendents and trained foremen. The plumbing contractors have invested more in the plumbing industry than any other person or group of persons in the industry. Their equipment is expensive, the service they render is invaluable, and they are always at the beck and

— this joint tins itself!

SOLDER flows uphill...downhill...sideways...when you make a Chase Sweat Fitting joint. You clean the metal to be sweated. Apply flux. Heat. Touch Chase Wire Solder to the joint and—*presto*—it's perfectly tinned all the way 'round and up.

Capillary attraction—an old law of nature—sucks the solder in to make a 5,000-lb.* pressure-tight joint. Using Chase *Rigid* Copper Water Tube, the finished line is professional-looking, straight-hanging, and costs the customer little more than a rustable job. Chase Brass & Copper Co., Incorporated, Waterbury, Conn.

CHASE
SWEAT FITTINGS

**Tests made on half-inch Chase Tube and Chase Sweat Fittings*

call of the American public to safeguard the best interests of the public.

As an instance of the importance of plumbing to the property owner there was recently a verdict rendered against the owner of a building in the sum of one hundred and fifty thousand dollars. The case was based on alleged faulty installation of plumbing. There are many damage suits in New York City where heavy damages have been collected against building owners due to improperly installed plumbing and many more cases based on the same course of action settled out of court. This condition could be avoided by proper co-operation between contracting plumbers, architects and owners.

The foregoing service to the American public can best be carried out by: One, a complete and scientific plumbing code. Two, the administration of that code by the board of health of each community. The board of health would see that trained men made the inspections on new buildings and if necessary made yearly examinations of buildings to insure that they were in a good, sanitary condition. The board of health having charge of plumbing would not be influenced by politics and would keep plumbing under similar rigid rules as those which control contagious diseases.

Pools—

(Continued from Page 25)

register accurately on the 8-in. meter. Incidentally, in order to calculate the amount of water used for make-up and for back-washing, the total of the amounts registered by the two small meters located under the pneumatic tanks is subtracted from the amount indicated by the large meter.

A few days ago, a reader of DOMESTIC ENGINEERING asked how to figure the size of the supply main for a swimming pool. This question might be answered by describing what was considered in the case of this pool, keeping in mind that different pools will have different requirements according to how they are designed and operated.

In the first place, the filling of this pool does not enter into the calculations because it is drained entirely only once a year and that is when it is closed. When it is made ready for use in the spring, it makes little difference if it takes two or three days to supply the necessary water. The item which controlled the size of the water main is the maximum daily demand. Strictly speaking, the job consists of two projects, the pool and the bathhouse. Both are supplied through the single 8-in. main.

The largest single peak demand is caused by the back-washing of the filters. This back-washing is subject to variations in regard to the length of intervals. As a rule, the filters are never back-washed oftener than once a day and sometimes not more than once a week. The amount of water required was figured at the rate of 15 gallons of water per square foot of filter area per minute. On this job this amounts to about three-quarters of the capacity of the main. A factor of safety of 20 per cent was provided. That is, after the total maximum peak load was calculated based on the water requirements of all of the fixtures and the pool, 20 per cent of this was added for safety.

The water demands of the showers were figured on the basis of handling a maximum of 1,000 persons per hour. With 56 showers this means that each shower must handle 18 persons per hour as a maximum. This allows an average of 3⅓ minutes for each person under the shower. Obviously, at this rate of use, the flow from the showers might be considered practically continuous. With each shower head rated as discharging 20 gallons of water per minute, and with 56 showers, the peak demand would amount to 1,120 gallons per minute. However, the use of self closing shower valves, operated by drop chains, cut down this maximum amount.

WATER HEATING PROVISIONS

As for the heating of the water for the showers and lavatories, this is accomplished by means of a gas fired steam boiler. This boiler also contains an arrangement for burning refuse. Note that Fig. 3 shows a firing door and shaker handle. The steam from this boiler is delivered to the header shown in both the plans of Fig. 4 and the photograph of Fig. 1. This header supplies the steam coils in each of the storage tanks. The return lines out of the bottom coil connections run back separately and join below the water line where they enter the boiler as indicated in Figs. 2 and 3. Each return line also is valved separately. Since a beam made it necessary to drop the returns and form a pocket, air vents were installed in the returns. The cold water header supplying the storage tanks is shown plainly in Fig. 2. Note that the cold water inlet to the tanks is shown as entering the bottom underneath the front end of the heating coils. The hot water outlets were taken off at the top toward the rear of the tanks. The operation of the water heaters is controlled by an aquastat. This, together with a thermometer is shown in Figs. 1 and 2. They are located at the mid-way point of the tanks with the result that half of the water stored must be heated to the desired temperature before the burners are turned off.

ESTIMATING HOT WATER

In estimating the hot water requirements the amount of water used for the showers, as well as for the lavatories, was figured. The system was designed to heat the water in the storage tanks to a temperature of from 150 deg. Fahr. to 160 deg. Fahr. and to deliver it at the showers at from 100 deg. Fahr. to 110 deg. Fahr. The length of time between heating periods of the boiler also was considered. Obviously, it is poor practice to make this period so short that there is a continual turning on and off of the gas burning equipment. The control is entirely automatic. However, the boiler is shut down at night and is started again the next morning about an hour before the pool is opened to the public. This is done to save the fuel used by the pilot and to reduce the stand-by losses. Each of the storage heaters has a capacity of 2,000 gallons. The two together are rated as being capable of heating 1,200 gallons of water per hour over a 100 degree temperature rise, from 50 deg. Fahr. to 150 deg. Fahr. Thermostatic mixing valves temper the hot water.

The mechanical engineer who designed the job is W. H. Eichelman of Chicago. The installation was made by Katz & Lewis Plumbing Company of the same city.

Automatic Heat *and* Air Conditioning Section

The "Heat Pump"—what is it? What does it do? How? Here is an exclusive article for our readers giving the inside story of this newest development in heating, based on the reversal of the refrigerating cycle..... An article to bring our readers up to date on fuel oil specifications and to clear up any confusion as to qualities of the various grades ... Comfort cooling looms as a lively topic with summer approaching. What it costs to cool an actual residence under summer conditions is told ..... Questions from our readers and authoritative answers....New products

A glance at the above indicates the practical, balanced, timely information contained in this section for the assistance of readers who recognize that automatic heating and air conditioning are going hand-in-hand toward a bright and profitable future.

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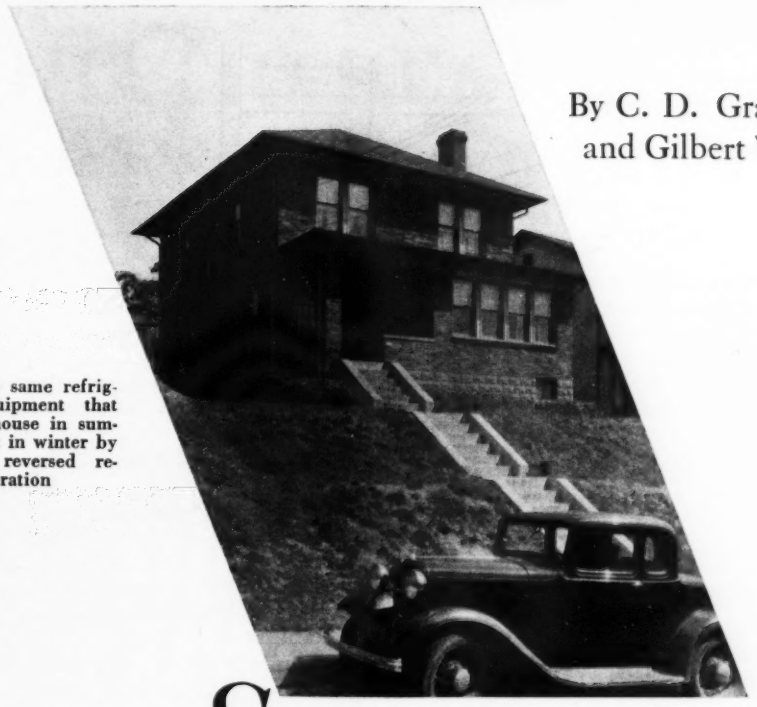


Fig. 1—The same refrigerating equipment that cools this house in summer heats it in winter by means of reversed refrigeration

Science reverses the refrigeration cycle and gives us... The Heat Pump!

HEATING buildings by means of the reversed refrigeration cycle has been the subject of much study for the past several years. The theoretical possibilities of this system were first suggested by Lord Kelvin in 1852, but only within the latter half of the last decade has much in a practical way been done.

For the benefit of those not familiar with refrigerating equipment, it might be well to explain that any mechanical refrigerator is merely a heat pump. Take, for example, the ordinary household electric refrigerator. Heat is absorbed from the inside of the box by the evaporator and dissipated to the room by the condenser. The quantity of heat removed from the cabinet is approximately twice the heat equivalent of the electrical input to the motor. When, however, the heat from the motor is included, the heat delivered to the room is about three times the heat equivalent of the power input to the motor.

To further illustrate the heat pump principle, suppose the evaporator were removed from a refrigerator cabinet and placed out-of-doors, but the condenser and motor were allowed to remain indoors. If the outside temperature were, say, 20 deg. Fahr. and the temperature of the evaporator were 10 deg. Fahr., the evaporator would pick up heat from the outside air and deliver it, through the condenser, to the inside air. As long as the evaporator temperature is held below the outside air temperature, the heat flow from outside to inside would continue.

Thus, when using refrigerating equipment as a heater there is actually nothing reversed as far as the equipment itself is concerned. When used for cooling, the heat extracted is thrown away, while when used as a heater, the heat is utilized and the cooling effect is thrown away.

In the discussion of reversed refrigeration, the terms "heat pick-up ratio" or "coefficient of performance" are frequently used. These two terms are synonymous and mean the ratio of the total quantity of heat delivered into a space—to the energy supplied to pump this heat.

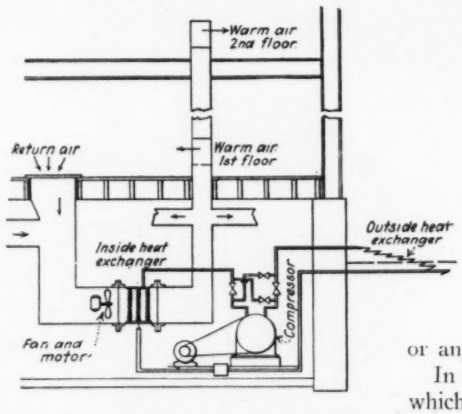
*Supply engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. †W. S. Barstow & Co., Reading, Pa.

As an example, take a reversed refrigerating machine which is delivering 30,000 Btu. to a room with the expenditure of 10,000 Btu. (2,900 watts) of electrical energy input to the motor. The "heat pick up ratio" would be 3 to 1, or the coefficient of performance would be 3.

The same heat pump principle applies to straight refrigeration, such as the making of ice. Here, heat is extracted from the water and dissipated by the condenser. When sufficient heat has been removed from the water, it freezes. However, the heat "pumped" from the water (and dissipated by the condenser) is greater than the energy input to the compressor drive. The following illustration should make this clear. For instance, take an ordinary ammonia system with a condensing pressure of 180 lb. absolute and a suction pressure of about 34 lb. absolute. The theoretical power required is 1.05 hp. per 12,000 Btu. per hour extracted. Allowing for the mechanical losses in the compressor and motor, the actual power would be about 1.6 hp. Since 1 hp. equals 2,550 Btu. per hour, the input to the machine would be $2,550 \times 1.6 = 4,080$ Btu. per hour. Thus, with an input of only 4,080 Btu. per hour the refrigerating machine does 12,000 Btu. per hour in work. This is a ratio of about 3 to 1 when operating as a refrigerator. However, when operated on the reversed cycle, the heat equivalent of the energy input may be added, so this same machine would have a coefficient of performance of 4,080 to 16,080 or about 4 to 1 as a heater.

On the basis of power at 2 cents per kw. hr. and a coefficient of performance for the reversed refrigeration cycle of 4.5 to 1, the cost per 1,000,000 Btu. is only $1.30. When the efficiency of a coal fired hot air residence furnace is computed for an entire heating season, 40 per cent is found to be a fair figure. On the basis of $14.00 per ton for coal having a Btu. value of 13,500 per pound, the cost of 1,000,000 Btu. is $1.30. Thus, a reversed refrigeration plant with a coefficient of performance of 4.5 to 1 when operating on 2 cent energy is equivalent in cost to $14.00 per ton coal. These assumed power and coal costs are representative of those prevailing in many sections of the country.

When the added advantages of cleanliness, convenience, summer cooling, etc., are considered, the heat pump should become very popular if it can be rendered practicable. Also, in those sections where basements are difficult or too costly to construct, on account of ground water conditions, the reversed refrigeration machine would unquestionably find a ready market, as the equipment could be placed in the attic, yard, garage, or any other out of the way place.



THIS paper has been prepared exclusively for the readers of DOMESTIC ENGINEERING to acquaint them with the latest developments in the field of heating and cooling through the use of refrigeration equipment. The experimental or test installations described were made by Westinghouse Electric & Manufacturing Co., in existing homes under actual operating conditions. The diagram above shows the heat pump arranged for heating or cooling and humidifying.

In the experimental installation which was made at Reading, Pa., a heat pick-up ratio of 5 to 1 was desired, so it was decided to use direct transfer of heat from the outside atmosphere to the refrigerant and from the refrigerant to the outside air. This eliminated the losses of multiple heat transfers and saved the cost of power to move the auxiliary heat carrying mediums.

In the small bungalow in which these tests were run a compressor driven by a 1 hp. motor was installed. The condenser or heat dissipator consisted of two finned coils, while the evaporator or heat absorber was of the natural circulation type, located outside the building in a sunny exposure.

Accurate measurements of the heat required for the house showed the total heat leakage at 0 deg. Fahr. outside temperature to be 9,000 Btu. per hour.

The condenser (heating coils) was designed to operate on a differential of 30 deg. Fahr, and the evaporator (heat absorber) on a differential of 20 deg. Fahr. Therefore, with a temperature of 0 deg. Fahr. outside and 70 deg. Fahr. inside, the evaporator and condenser were operated at —20 deg. Fahr. and +100 deg. Fahr., respectively. The control device was a standard thermostat having an on and off position. This instrument stopped the compressor when the desired temperature was exceeded by about 1 deg. and allowed it to cut in again when the inside temperature fell about 1 deg. below the setting.

This installation did not come up to expectation, because the average heat pick-up secured was only about 3 to 1. However, a study of known mechanical efficiencies of the system and of other standard pieces of similar equipment showed that a 4.5 to 1 heat pick-up ratio could be attained on a somewhat similar unit. Also, this study indicated that with certain refinements a performance of 5 to 1 might be attained.

A few tests were run with this original system to determine the possibility of using direct radiation for summer cooling. The superiority of the indirect system, at least as far as cooling was concerned, soon became evident. The frosting of the radiators, the difficulty

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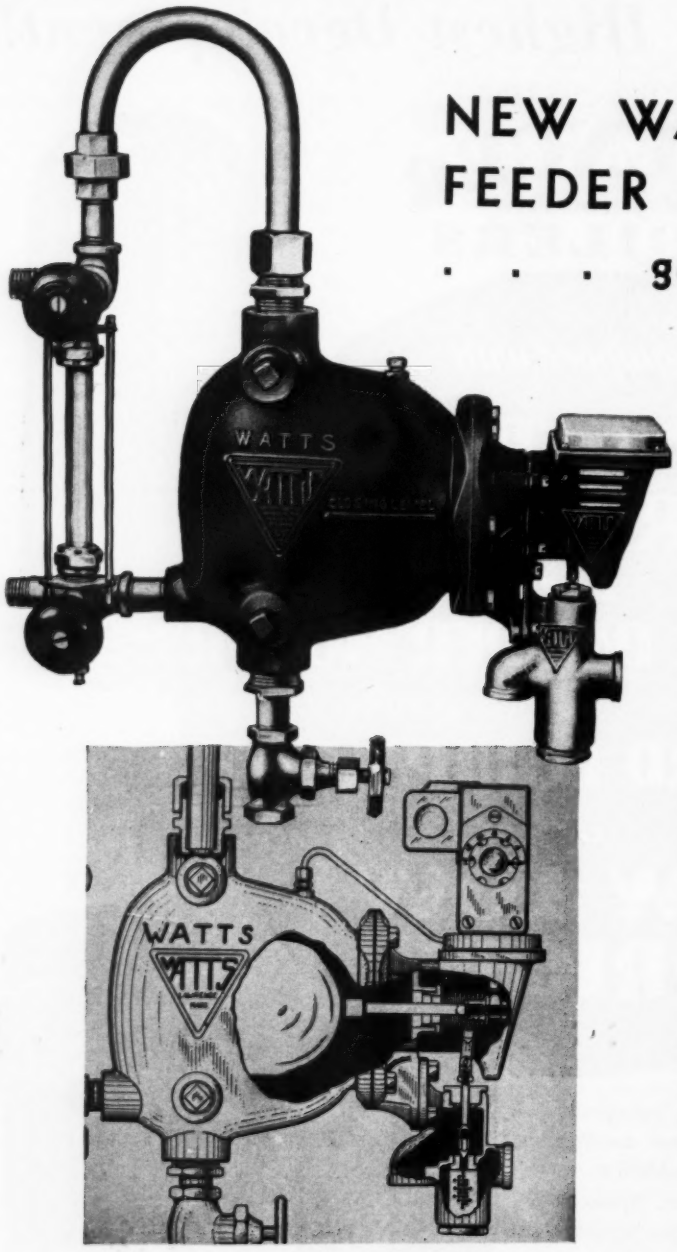

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with air stratification and the inconvenience of disposing of the condensation were major problems.

This first installation was intended merely to demonstrate that the reversed refrigeration principle could be put to practical use. This having been accomplished, it was decided to make another installation in an actual residence where more could be learned of possible field troubles. The home selected had a calculated heat loss of 70,000 Btu. per hour with an outside temperature of 0 deg. Fahr. It was heated with a gravity circulation warm air coal fired furnace, and this was left intact to take care of the heating during inspection periods, etc.

This second system was similar to the first except that due precautions were taken to eliminate unnecessary mechanical noise, and the condenser was of the indirect type. On the previous installation the gravity circulation evaporator had proven so satisfactory that it was decided to retain this feature. Both the inside and outside surfaces were designed for a 30 deg. Fahr. differential.

An air turn-over of 10 changes per hour for the usable portion of the house was decided upon, which set the air volume through the inside coil at approximately 2,000 cu. ft. of air per minute. The use of the counter-flow principle allowed some reduction in the size of this coil. The compressor had a displacement of about 40 cu. ft. and was equipped with a 7½ hp. variable speed motor. An automatic humidifier also was used.

THERMOSTAT CONTROLLED COMPRESSOR

The thermostat, located in the living room, was connected so that the speed of the compressor was automatically adjusted to the load, thus avoiding frequent starting and stopping. By varying the speed with the load, higher efficiencies were obtained, and electric power saved. During the summer the inside temperature was maintained 15 deg. below the outside temperature and the humidity was held to a constant value.

The winter operation of the system as a heat pump gave most gratifying results. Check runs made with the coal fired equipment showed that the heat pump gave a more uniform temperature under similar weather conditions. The figures given in Table I are a fair example of the uniformity of both dry bulb and wet bulb temperature under average conditions.

It was expected that there would be some trouble with the evaporator when the outside conditions were rainy or foggy, accompanied by temperatures below 45 deg. Fahr. On February 10th and 11th, 1932, a continuous two day test was run under such conditions. The outside temperature varied between 38 deg. Fahr. and 48 deg. Fahr. but, with the exception of a few hours, remained about 41 deg. Fahr. or 42 deg. Fahr. There was rain, sleet, or fog practically the whole duration of the test. There was some frosting on the evaporator, but this did not build up sufficiently to cause any serious reduction in capacity.

The real test of the equipment's capacity did not come until March, 1932, for, as will be remembered, December, January and February were unsually mild. Table II, which is the log of March 7th and 8th, gives an idea of the operation under severe conditions. The strong winds prevailing during this period more than counteracted the fact that the outside temperature was above 0 deg. Fahr. In fact, the output of the heat pump was greater than 100,000 Btu. per hour for peak periods, whereas the calculated heat losses were only 70,000 Btu. per hour in 0 deg. Fahr. weather with moderate wind.

TABLE I

Excellent Temperature Regulation Obtained
(January 4, 1932)

Time	Outside Temperature Dry	Outside Temperature Wet	Inside Temperature Dry	Inside Temperature Wet
9:40 A. M.	38	34	71	63
10:30 A. M.	39	33	72	63
11:10 A. M.	39	34	72	62
12:10 P. M.	39	36	71	62
1:10 P. M.	39	34	71	62
2:00 P. M.	39	35	71	62
Average	39	34	71	62

This unusual load taxed the capacity of the motor. Its rated input was 6.6 hp., but this rose to 9.4 hp. for short periods.

The refrigerant used in the house in which these experiments were conducted was dichlorodifluromethane, better known as Freon or F-12.

The installation was not as quiet as had been hoped.

(Continued on Page 65)

Fig. 2—This six-ton compressor pumps heat in or out of the brick house shown in Fig 1 as the weather conditions require. Vapor from the evaporator or outside heat exchanger is compressed, thereby raising its temperature. Flowing through the condenser or inside heat exchanger, the gas becomes a liquid thus liberating heat

This paper was written especially for our readers, at our request, that they might be fully informed on the new

Fuel Oil Specifications

By A. J. KRAEMER, Senior Refinery Engineer, Bureau of Mines, Washington, D. C. . . . *Published by permission of Director, U. S. Bureau of Mines. Not subject to copyright.*

GENERAL acceptance of a commercial standard for fuel oils and adherence thereto in all references to fuel oil would be helpful to the best interests of every one concerned in the production, sale, and use of fuel oil and fuel-oil burners. The present unsatisfactory condition of indefiniteness in describing requirements for fuel oils and oil burners and emphasis on nonessentials is not only confusing, but is largely unnecessary. Although conditions with respect to fitting fuels to burners now appear to be better than they were two or three years ago, additional improvement is possible. Many salesmen for fuel oil and for oil burners continue to talk gravity and Btu. values in referring to the type of oil suitable for a given type of burner, instead of referring to one of the grades included in the commercial standard.

The attention of distributors and consumers of fuel oil again has been directed to the classification of fuel oil and specifications for fuel oils used in various types of fuel-oil burning equipment by the recent action of the Standing Committee of the industry.[3] This committee is composed of representatives of all types of interests; producers, consumers, and general interests, with the consumers and general interests predominating. The list of members is given in the Annual Report of Committee D-2 (see reference *1* in the bibliography at the end of this paper).

This committee has recommended certain revisions of the Trade Standards for Domestic and Industrial Fuel Oils (*2*) equipment. (Numbers in parentheses in the text refer to corresponding numbers in the bibliography at the end of this paper). Although no changes are made in the numerical limits of the actual specification requirements as given in the former Trade Standard CS12-29, stipulations are added regarding maximum permissible sulphur content for fuel oil for certain purposes where sulphur content may be injurious. In other words the recommended revisions are mainly editorial and are intended to clarify and simplify the classification of the oils. For example, the title of the commercial standard has been changed from "Domestic and Industrial Fuel Oils" to "Fuel Oils," with a statement limiting the application of oils covered by the specification to various types of fuel-oil burning equipment. Apparently there is no essential difference in the requirements for oil for various types of oil-burning equipment that differentiates "domestic" and "industrial" fuel oils. On the other hand, specifications for oils suitable for use as fuel in Diesel engines involve somewhat different types of requirements. The subject of specifications for Diesel engine fuels is receiving widespread and intensive study at present and probably satisfactory specifications will be available eventually by which it will be possible to purchase fuel for various types of Diesel engines with assurance of satisfactory service.

The trade practices with respect to classification of fuel that have grown up during the development of oil burners are an outgrowth of former practices in the oil industry when oils similar to those now widely used as fuels were used for entirely different purposes and were sold to an entirely different group of consumers. When the first oil burners were placed in operation, oil refiners supplied the oils they had in stock and designated them as had been their practice, by gravity, color, and possibly pour point. Gradually oil burners evolved into fairly definite types permitting the use of definite types of fuel oil. Refiners generally in each section of the country were able to provide fuels suitable to the various types of domestic oil burners, and they adhered to their designations of these oils according to their established practice. This practice was not particularly confusing so long as a given designation according to gravity and other characteristics, was confined to the area in which it was

(Continued on Page 67)

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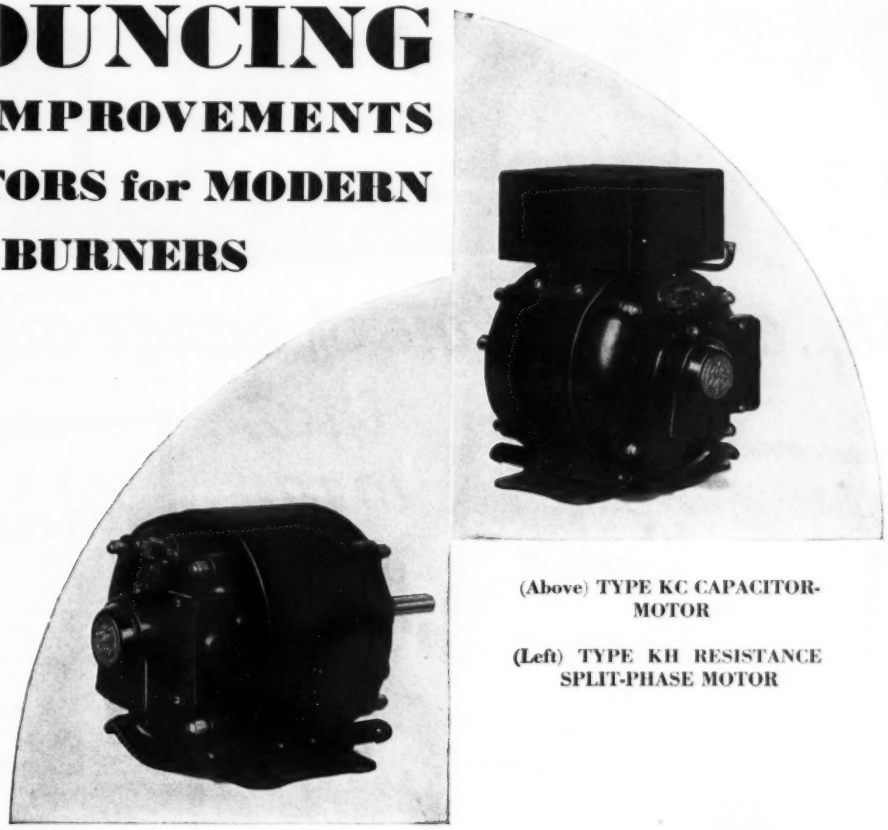

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Table 1—Complete Summary of Tests

Date	Test No.	Start of Test	Length of Test Hours	Outdoor Temperature			Indoor Temp Aver	Aver Temp Diff In—Out	Aver. Humidity		Ice Meltage		Dehumidification Total Lb	Hourly Heat Loads					
														Uncorrected		Corr. for Basement		Corr. for Basement	
				Max During Test	Min During Day	Aver During Test			Outdoor Aver During Test	Aver Indoors	Equiv Total Lb	Corr. for Basement Loss Lb		Total	Sensible	Total	Sensible	Total	Sensible
														Btu per Hour				Btu per Degree per Hour	
7-7	P-4	10:45A	8 0	88 0	73 5	83 8	77 7	6 1	46 2	63 4	1060	701	32 19	19225	15000	12625	8100	2070	1377
7-9	P-5	1:15P	10 0	87 0	62 5	81 2	75 5	5 7	69 7	56 1	1459	1001	38 24	21000	16980	14400	10380	2526	1821
7-10	P-6	1:25P	4 0	90 5	70 5	86 3	77 2	9 1	65 6	60 4	472	289	20 51	16975	11590	10375	6990	1140	548
7-11	P-7	2:00P	6 0	85 0	66 5	81 5	78 2	3 3	47 4	53 3	907	632	27 82	22885	18010	16285	11410	1937	3456
7-12	P-8	2:00P	7 5	93 5	59 5	86 4	77 0	9 4	58 1	51 9	1318	975	41 10	25300	19500	18700	12900	1989	1372
7-13	P-9	9:30A	13 5	99 0	70 0	91 0	78 4	12 6	58 0	50 8	2642	2024	97 96	28180	20560	21580	13960	1712	1108
7-14	P-10	11:40A	14 25	99 0	75 0	89 4	81 1	8 3	62 8	49 2	3050	2397	113 23	30820	22470	24220	15870	2017	1912
7-15	P-11	10:00A	24 0	103 0	78 0	88 8	80 8	8 0	59 9	46 2	4243	3144	111 56	25450	20100	18850	13800	2356	1725
7-16	P-12	10:00A	24 0	97 0	77 5	83 2	80 0	3 2	59 1	45 1	2713	1614	76 48	16280	12930	9680	6330	3026	1978
7-17	P-13	10:00A	12 0	90 5	72 5	85 8	80 7	5 1	37 3	44 0	1261	711	30 31	15330	12180	8530	5380	1673	1153
7-20	P-14	9:00P	24 0	98 0	78 0	86 7	80 0	6 7	60 5	42 9	3530	2431	109 04	21170	16410	14570	9810	2174	1464
7-21	P-15	9:00P	24 0	97 5	74 0	83 9	79 2	4 7	55 4	43 3	3320	2221	88 94	19920	16030	13320	9430	2833	2005
8-10	P-20	9:30A	12 0	91 0	67 0	83 1	76 4	6 7	73 4	48 8	1761	1211	61 11	21120	15775	14520	9175	2166	1369
8-15	P-21	9:30A	10 5	87 0	62 0	81 8	75 6	6 2	71 5	50 4	1238	757	35 19	16975	13425	10375	6825	1674	1101
8-16	P-22	9:00A	13 5	90 0	72 0	84 0	77 1	6 9	76 3	48 6	2025	1407	60 71	21600	16880	15000	10280	2173	1489
8-23	P-24	10:00A	11 0	87 5	57 5	80 9	74 9	6 0	52 5	44 4	1858	1334	40 64	24060	20180	17160	13280	2908	2262
8-24	P-25	10:00A	11 0	90 0	60 0	83 5	75 1	8 4	52 3	46 0	1464	960	35 01	19170	15830	12570	9230	1706	1098
8-25	P-26	9:00A	13 0	89 5	69 0	83 6	77 3	6 3	63 5	48 1	1578	983	45 01	17470	13835	10870	7235	1725	1148
8-26	P-27	9:00A	12 0	87 0	67 5	80 8	76 6	4 2	69 0	46 5	1513	963	41 44	18155	14525	11555	7925	2751	1886
8-29	P-28	7:00A	24 0	94 0	75 0	82 7	78 0	4 7	74 2	47 2	3680	2581	104 77	22080	17500	15490	10900	3295	2318
8-30	P-29	7:00A	24 0	95 0	73 0	81 9	77 9	4 0	72 2	47 4	3752	2653	109 39	22500	17720	15900	11120	3975	2780
8-31	P-30	7:00A	24 0	93 0	71 5	79 0	77 1	1 9	74 1	45 9	3247	2138	87 15	19420	15600	12820	9000	6750	4737

The material contained in this article is taken from a report of the result of research conducted at the University of Illinois in cooperation with the American Society of Heating and Ventilating Engineers by

A. P. KRATZ *and* S. KONZO

THE principal objects of this investigation which was carried on in the Research Residence at Urbana, Illinois, were (1) the determination of the cooling load and its hourly variation when cooling the Research Residence as a whole, under both night and day conditions; (2) the allocation to the various rooms of the heat entering the Residence, and the determination of the hourly variation in the cooling load of the individual rooms; and (3) the determination of the effectiveness of awnings as a means of reducing the cooling load of the Residence as a whole.

In general, the results indicated that the ducts of a central forced-air heating system could be successfully adapted as a distributing system for cooled air without material alteration. Some readjustment of dampers was necessary in order to balance the plant when the cooled air was circulated. It was necessary to adjust the dampers so that more air was delivered to the second story than to the first. When the plant was balanced, the rooms were uniformly cooled with no indication of the existence of a pool of cold air near the floor, and as the sun changed position, the balance was not materially disturbed when the plant was controlled with a single thermostat placed in the dining room. An average temperature difference of approximately 3.5 deg. was observed between the floor and the ceiling, and 1.8 deg. between the floor and the breathing level, with the cooler air near the floor. The air was delivered from the registers at temperatures varying from 60 to 70 F., depending on the outdoor temperature, and at average velocities varying from 50 to 450 fpm. measured with an anemometer placed one inch from the register face. No objectionable drafts were observed in the rooms, except in one case in which the air was delivered from a baseboard register at a velocity of approximately 450 fpm. Even in this case, conditions were easily corrected by employing a baffle in front of the register face in order to direct the air flow toward the ceiling. The best distribution of cooled air in the room was obtained with the wall register placed 7 ft. above the floor. In this case, the velocity of the air leaving the register was approximately 350 fpm. The gain in temperature of the air, from the fan inlet to the register faces did not exceed 3 deg., and condensation did not appear at any time on the furnace casing or basement duct system. No insulation was used on these surfaces. The basement temperature remained practically constant at 70 F.

The cooling season at Urbana, Illinois, during the summer of 1932, extended from June 1 to October 1, with a total of 62 days on which the maximum temperature reached 85 F or more. This represented a total of 1,471 degree-hours above 85 F. A total of 43.3 tons of ice was used for the season. The maximum hourly rate of ice meltage observed was 220 lb. This rate occurred on Test P-29, when the Residence was not equipped with awnings, and for which the maximum outdoor temperature attained was 95 F. The plant had been in operation for the previous 24 hours. The maxi-

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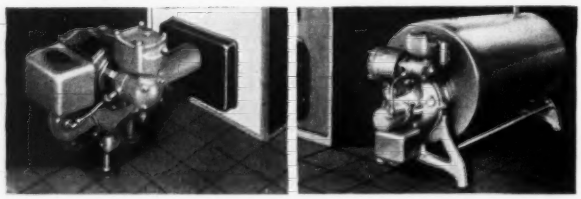

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mum meltage for any 24-hour period was 4,243 lb. This occurred on test P-11, when the Residence was equipped with awnings, and for which the maximum outdoor temperature attained was 103 F. In this case, however, the plant had not been in operation for the 24 hours previous to the test.

Since the total volumes of air and water circulated were not varied for the different tests, the electrical input to the fan and pump motors remained practically constant. The power consumed by the fan motor was ¼ kw., and by the pump motor was 1¼ kw. The power required by the pump was influenced by the pressure of 23 lb. per square inch required to operate the spray heads in the ice tank. The use of these spray heads was found necessary in order to break the water up into a sufficiently fine spray to prevent the formation of craters in the ice. These craters filled with water and interfered with the accuracy in the determination of the ice meltage. The gain in accuracy resulting from the elimination of the craters, however, was obtained by a sacrifice in the operating efficiency of the plant as a whole, due to the pressure required by the spray heads. In a service plant, where the accurate determination of the ice meltage is not necessary, the spray heads could be dispensed with and the water showered over the ice in larger streams, thus reducing the power for the pump.

The cooling load in the basement consisted of the heat gain of the coils, furnace casing and duct system, and the electrical load imposed by the fan and pump motors and the lights. Separate determinations of this load indicated that it remained practically constant at 45.8 lb. of ice per hour, or 6,600 Btu. per hour.

WHAT TESTS SHOW

The principal results for all tests are given in Table 1. The lengths of tests were necessarily determined by the character of the weather. Furthermore, the total ice meltage in the case of short tests was largely influenced by the history of the Residence previous to the start of the test. On some of the shorter tests, the starting load formed an excessive proportion of the total ice meltage for the test. Hence, many inconsistencies may be observed in comparisons based on the averages and totals for individual tests. It was therefore necessary, for the purpose of analysis, to group the tests made under comparable conditions, and in some cases the analysis has been based on the maximum load extending over a 4-hour period including the maximum outdoor temperature. Some comparisons have been based on the load corrected for basement losses.

In the test plant, the basement load was augmented by the necessity for the use of spray heads in the ice tank and by the use of more basement lights than would be demanded by a service plant. Also, during the tests, an effective temperature of approximately 72 deg. was maintained in the Residence. This condition was perfectly comfortable with the occupants clothed in light summer clothing. No member of the staff experienced any ill effect either from shock due to sudden changes in environment or from contracting a cold. However, the indications were that somewhat less cooling would be satisfactory for residence service. Just how much less is debatable at present. Hence, it is possible that by

varying the design and operation from that used for the test plant, a reduction in ice meltage could be made. The figures presented, however, may be considered as representative, with a reasonable margin of safety, of the cooling requirements for a structure similar to the Research Residence.

Heat Pump—

(Continued from Page 59)

The noise was somewhat comparable to that of the average domestic oil burner but of a higher pitch. The mechanical speed changer was probably responsible for a portion of the noise and the valves and gas squeaks in the compressor for a large part of the remainder. The sound vibrations seemed to travel more through the building foundation and construction than through the ducts, which were sound treated for a short distance from the equipment.

The general conclusion to be drawn is that this type of heating system is not yet far enough developed for general use. Many problems remain to be solved, even though these experiments demonstrated that uniform temperatures could be maintained. The heat pick-up ratio was satisfactory. Of course, at low outside temperatures it fell fairly low, but this was counterbalanced by high performance during the very mild weather. The average heat pick-up ratio for the season was about 5 to 1, neglecting the energy required for the fan.

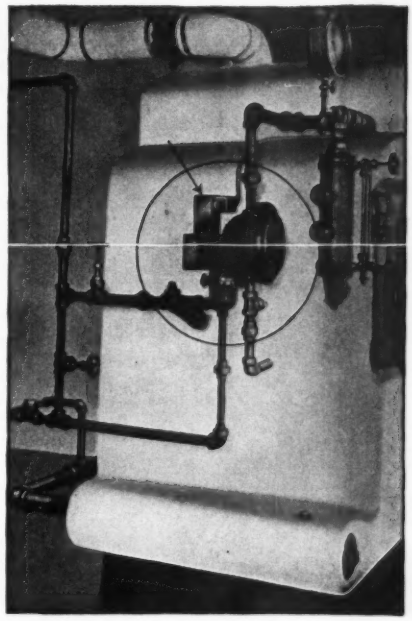
TABLE II

Log of Performance During Severe Weather

Time	Deg. F. Temperature Outside	Inside Dry	Inside Wet	Remarks
9:00 P. M.	21	76	68	Fair, Moderate wind
10:00	20	78	70	Fair, Strong wind
11:00	19	77	70	Fair, Strong wind
12:00	18	74	67	Fair, Strong wind
1:00 A. M.	17	71*	65	Fair, Strong wind
2:00	16	69	63	Fair, Strong wind
3:00	16	66	60	Fair, Strong wind
4:00	14	65	59	Fair, Strong wind
5:00	14	67	61	Fair, Strong wind
6:00	14	67	62	Fair, Strong wind
7:00	14	68	62	Fair, Strong wind
8:00	15	69	62	Fair, Strong wind
9:00	18	70	63	Fair, Strong wind
10:00	18	71	64	Fair, Strong wind
11:00	20	71	65	Fair, Moderate wind
12:00	22	72	65	Fair, Moderate wind
1:00 P. M.	24	74	67	Fair, Moderate wind
2:00	23	73	65	Fair, Moderate wind
3:00	25	73	66	Fair, Moderate wind
4:00	25	72	65	Fair, Moderate wind
5:00	24	72	66	Fair, Light wind
6:00	23	72	65	Fair, Light wind
7:00	20	72	65	Fair, Light wind
8:00	19	72	65	Fair, Light wind
9:00	18	74	67	Fair, Light wind

*Note—The indoor temperature started falling shortly after midnight due to the thermostatic control switch being manipulated by residents before retiring. This was corrected by test attendant as soon as noticed.

Further experiments are being conducted in a residence near Pittsburgh, Pa. (See Fig. 1.) Forced circulation through both the condenser and evaporator is employed and the system has some refinements not heretofore tried.



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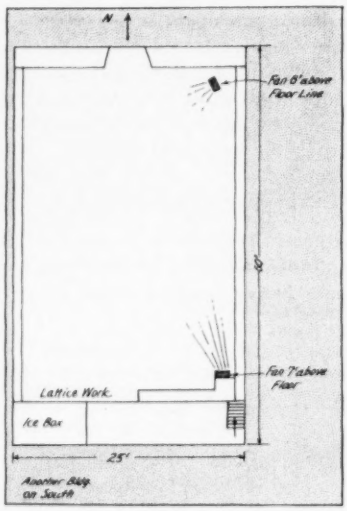
An Air Conditioning Question is ANSWERED

Walls and Windows Sweat

TO THE EDITOR:

We have a store building 25 ft. by 60 ft. with a 12-ft. ceiling height. The walls are of 12-in. hollow tile construction. Two sides and the front are exposed. It is used as a grocery store. A plan is shown in Fig. 1. Two unit heaters with city steam are installed for heating. The problem is that the walls are always damp from sweat or condensate, thus spoiling the packaged material that is next to the wall. Also, the pieces of candy run together. Just what causes this and how can I remedy the condition. Is it a lack of ventilation or what?

W. J. H.
Austin, Minn.



TO THE READER:

Condensation on a wall can occur only when the temperature of that wall falls below the dew point of the air in question. If the walls are warm, condensation will not take place. Either the walls to which you refer are so poorly constructed that they permit an excessive amount of heat loss or not enough heat is being delivered by your installation to overcome the normal heat loss. The vegetables and fruits handled in a grocery store normally cause the humidity to be high. Accordingly, your problem is just that much more difficult.

You say that city steam is used. Our guess is that at six o'clock, when the store is closed for the day, the unit heaters are shut down and no more, or very little, heat is supplied until the next morning, when the heaters are worked to capacity to bring the temperature up to normal. If this is the case, then this is what happens; the outside walls give up all of their heat and become thoroughly chilled, even to the extent of causing frost to be formed on them by morning. Then, when the units are turned on in the morning, the heat warms the inner surface of the walls and causes the frost to melt and run down them. In addition, the very humid air in the store which is stirred up by the

unit fans comes in contact with the cold wall surfaces and a part of this moisture is deposited thereon to cause more water until the walls become warm again. If all of this is so, the solution to the problem is that of supplying enough heat at night to prevent the wall temperatures from falling so low. If the owner is an economical type of person and if manual control is employed, possibly the walls are never above the dew point.

Here is another angle. What is done with the waste condensate from the city steam supply? Is this discharged to the sewer. If so, and if it is an open discharge onto a cold basement floor or into cold air, the vapor which naturally forms serves to further humidify the air and add to the difficulty.

If none of these serious effects exists, and if it is merely an excessively humid condition of the air, then your suggestion for drawing in and heating cold outside air should go a long way in helping matters. In cold weather, as you know, the outside air, while it may have a high relative humidity for the low outside temperature, in reality contains very little moisture per pound of air, because most of the moisture has been condensed out of it. Therefore, when this cold, dry air is heated, its relative humidity becomes very low and dilutes the high humidity air already in the building so that air with a moderate humidity is produced. For instance, when outside air at, say, 10 deg. Fahr. above zero having a relative humidity of 90 per cent is introduced into a room and heated to 70 deg. Fahr., the relative humidity becomes approximately 8 per cent. This is because as air is heated its ability to hold moisture is increased.

In applying the solution of introducing outside air to the problem, undoubtedly it will be necessary for you to install an additional unit heater because of the increased load due to heating the outside air. In this case the outside air should be piped directly to the unit with proper mixing dampers and provisions to prevent freezing.

What Is Going to Be Done

"In answer to your reply, this job is, as you say, manually controlled—turned off at 6 p. m. and on again at 7 a. m. We are going to strip the walls and cover them with a board insulation. Then they will be plastered again. The seriousness of the conditions we are correcting may be partially indicated by the fact that at times there is 8 in. of ice at the base of the windows. Thanking you for your help in this, I remain,"

Austin, Minn. W. J. H.

Fuel Oil—

(Continued from Page 60)

applicable. However, a purchasing agent who designated his requirements for fuel oil by gravity and color, based on trade practice in Chicago, for example, and whose source of supply was a California or Gulf Coast refinery, ran into difficulties due to differences in gravity relationships and other characteristics of oils made from different types of petroleum.

Gradually as oil burners and fuels developed, an

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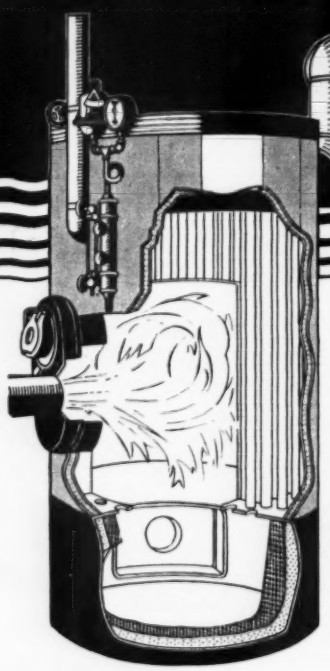

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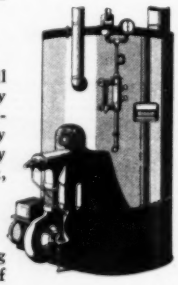

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understanding of the essential requirements of fuels for different types of burners was developed, and attempts were made to codify this increased knowledge in the form of specifications. However, the traditional classifications of fuel oils had been so deeply rooted in the practices of the oil marketers that progress in adopting nomenclature based on rational specifications has been exceedingly slow.

This paper has been prepared (1) to give a short history of the trade standard; (2) to set forth the reasons for the various items in the specifications; and (3) to explain why gravity, heating value, and other properties are excluded from the specifications. In the preparation of this paper, the literature has been drawn on freely without specific acknowledgment. The writings on the subject of specifications for fuel oils have appeared in a variety of places, making reference difficult unless the several conclusions are brought together in summary form. In this paper a restatement of the important conclusions of the several investigators has been made and a selected bibliography is appended for the benefit of those who wish to give the subject more detailed study.

It is necessary for a proper understanding of these specifications, to realize that they are intended to be trade standards for use by the entire fuel-oil and oil-burner industries throughout the United States. The inclusion in the specifications of any requirements that would be restrictive of the possible supply, or would increase costs because it would require additional processing of the oils without compensating gains in quality, would not be justified.

HISTORY OF THE TRADE STANDARD

The present commercial standard for fuel oils had its beginning in "a statement dealing with the considerations involved in the preparation of specifications for domestic fuel oil and incorporating proposed forms of specifications for two grades of fuel oil for this use." This statement was prepared by Committee D-2 on Petroleum Products and Lubricants of the American Society for Testing Materials at the request of the American Oil Burner Association for assistance in the problem of developing adequate and reasonable specifications for domestic fuel oils." (*3*)

With this statement of fundamentals as a basis, specifications were developed for six grades of fuel oils by the cooperation of the American Oil Burner Association and the American Petroleum Institute. In order to bring these specifications into broader use, the cooperation of the Division of Trade Standards of the Bureau of Standards was requested. A conference was held in New York City January 9, 1929, which recommended that the specifications be accepted as a trade standard for the production, sale, and use of fuel oil. These specifications subsequently were published as Trade Standard CS12-29, (*2*) effective July 15, 1929. This standard has been in use since that time, and the recommended revisions are based on experience gained during that interval. In the following discussion some of the more important features of the revisions are discussed.

No. 1 oil of the commercial standard is described in the proposed revision as a distillate oil for use in burners requiring a volatile fuel. For the type of burner for which it is required, the essential is its volatility.

(To be continued)

New Developments in PRODUCTS for Dealers

This section is for the latest news of automatic heat and air conditioning products. The general new products section starts on page seventy-three.

Room Coolers for Shops

The room cooler which is shown here has just been placed on the market. Its capacity is rated as being approximately one ton of refrigeration—selected for a moderately sized room. Provisions for cleaning and dehumidifying the air as well as cooling, have been provided. Heating and humidifying elements also are to be included in some of the units for winter use. The design of these units has been worked out so that they may be used singly or in multiples. Westinghouse Electric & Manufacturing Company, located at East Pittsburgh, Pa., is the maker.

An Oil Burning Water Heater

A new water heater of the horizontal type has just been placed on the market. It is shown in the illustration on the next page. It is described as being a self contained unit, automatically controlled and capable of burning any fuel oil down to and including No. 4. Its height is 27 in., length 55½ in. and width, 22⅜ in. The tank is insulated. The burner is intermittent in operation, being controlled by a water temperature regulating device which may be set for any temperature from 140 to 200

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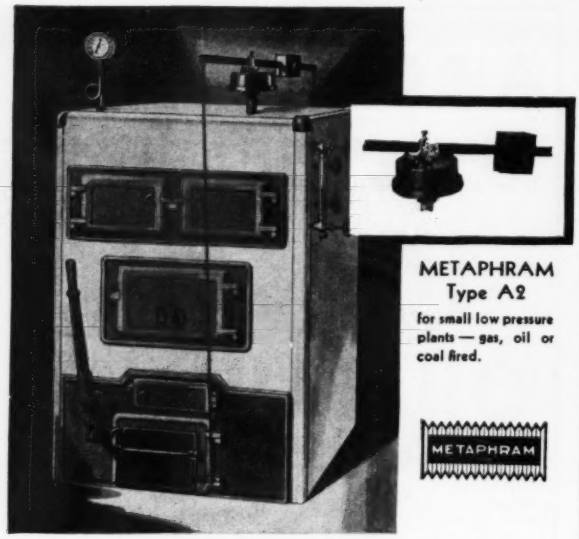

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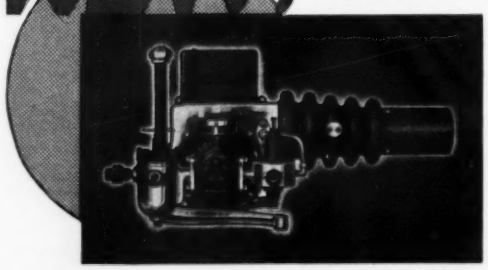

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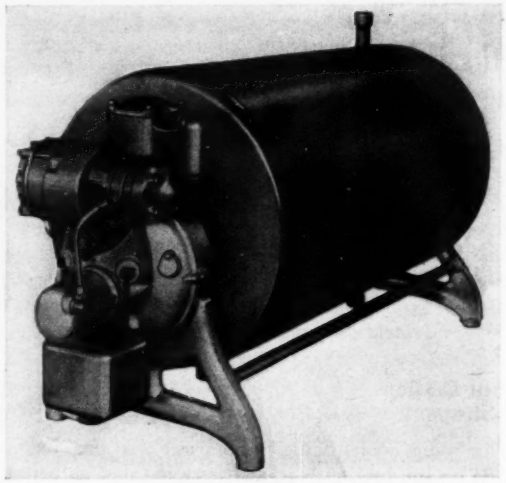
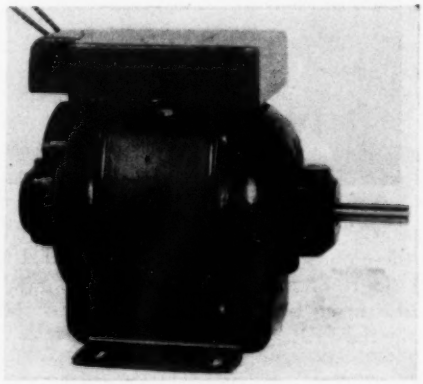


deg. Fahr. The heating capacity for a 100 degree temperature rise is rated at 50 gallons per hour; for 80 degrees, 70 gallons. Its fuel consumption is rated as ½ gallon per hour. Two-inch hot and cold connections are provided. Williams Oil-O-Matic Heating Corporation of Bloomington, Illinois, is the manufacturer.

New Line of Motors

A new line of split phase motors and of a electrolytic start motors has been introduced. The accompanying illustration shows one of the electrolytic start motors which is designed for use with oil burners, stokers or refrigerator applications where quiet operating characteristics and moderately high torques are required. It



will be noticed that the box containing the electrolytic condenser is fastened to the top of the motor stator. Motors are available with ⅛, 1/6 and ¼ hp. ratings.

The split phase motor has been designed for applications requiring quiet operating characteristics, normal torque and light starting torque, such as ventilating equipment, oil burners and fans. The Leland Electric Co., 1501 Webster Street, Dayton, Ohio, is the manufacturer.

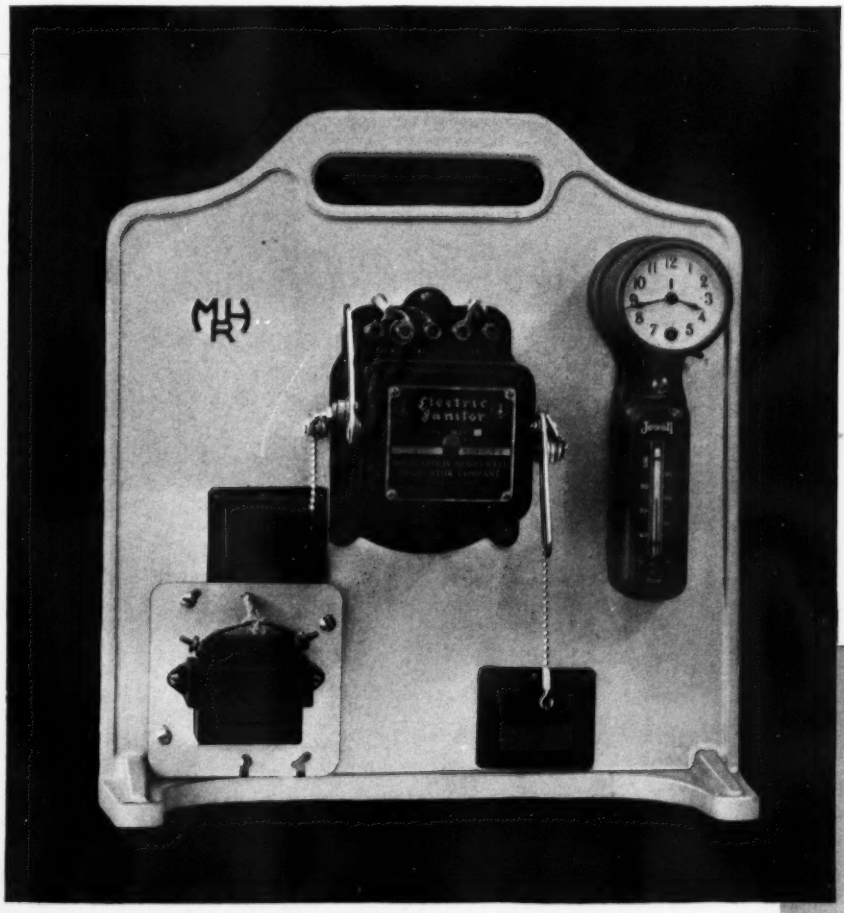
This . . .

DEMONSTRATING DISPLAY

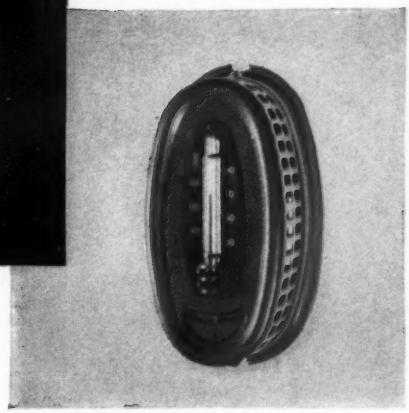
Will Sell

Electric Janitors FOR YOU

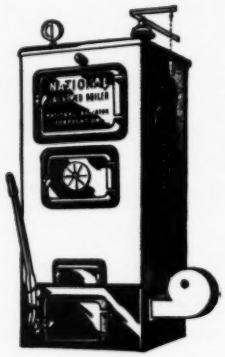
PUT this action display to work for you. Let it sell the new and improved Electric Janitor or the new DeLuxe Electric Janitor for all coal, coke or similarly fired domestic heating plants. The prices, $20.90 and $36.50 to dealers, are the lowest ever offered . . . This demonstrating stand, completely equipped and ready for mounting your Electric Janitor, suitable for your showroom or for outside demonstrations, is supplied without cost with orders for 8 or more Electric Janitors, either model, or it may be purchased individually at $2.50 . . . . Minneapolis-Honeywell Regulator Co., 2801 Fourth Avenue So., Minneapolis, Minnesota. Branch or distributing offices in all principal cities.



THIS DISPLAY, of cast aluminum, is completely equipped with dampers, chains, pulleys, rubber cushions, electric cord and plug, and is drilled and tapped for either the DeLuxe Electric Janitor (illustrated) or the standard model (thermostat shown below). You merely mount the equipment from your stock, and connect the wiring.



MINNEAPOLIS-HONEYWELL
Control Systems



"It pays for itself" . . . those are the magic words that catch a prospect's ear today. Where fuel costs are high, and winters hard and long, the National Forced Draft Unit —by making it possible to burn the cheapest grades of fuel—literally saves its purchase price in a few months. Savings as high as 40% have been reported.

"It pays you"—those are words that should rivet the attention of everyone in the heating business today. One concern sold 25 of these units in 27 days—making a slack time busy, keeping their men employed, and gaining an excellent profit for themselves.

The National Forced Draft Unit can be applied in a few minutes to any hot air furnace, or to any steam, vapor or hot water boiler. A Minneapolis-Honeywell thermostat, furnished as part of the system, turns the motor on and off as the temperature varies, giving the customer automatic heating in addition to economy. The unit is one of the best house-to-house items in years. It doesn't require heating experts or an expensive force to sell it . . . you can get good salesmen, willing to work on commission, to push it for you. A supply of snappy, attractive advertising folders will be given you free with each unit. A liberal payment plan lets you sell on time, give the customer the advantage of very small monthly payments. You need not even bother with servicing—the local Minneapolis-Honeywell organization will, if you wish, arrange to handle this for you.

Here is a real profit possibility. The harder-boiled the prospect, the easier the sale. Cash in on the profits that await you; write for full details of our liberal dealer plan—today!

National Radiator Corp., Johnstown, Pa.
Please send me your dealer plan.

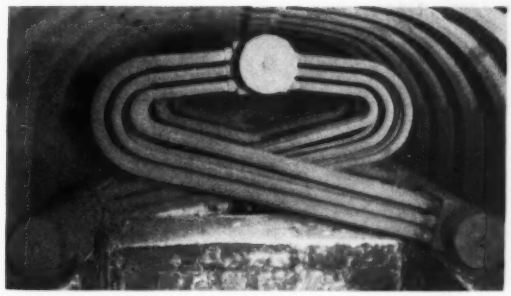
Name .....

Street .....

City and State .....

NATIONAL RADIATOR CORPORATION
JOHNSTOWN, PENNSYLVANIA

New Developments and Improvements in PRODUCTS for the Store, Shop and Job



New Design for Water Closet

A recent announcement is to the effect that there has been placed on the market a new water closet designed for efficiency and quietness for use in the better class of homes, apartment buildings and fine hotel and club suites. The rim supply has been muffled to overcome

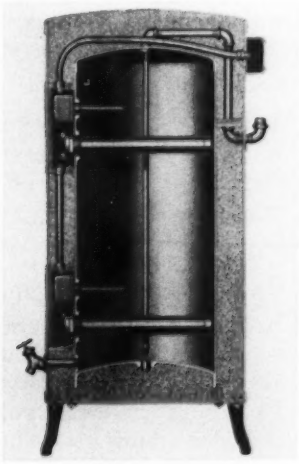
objectionable flushing noises. The siphon action is made to be vigorous and to start immediately without water rise in the bowl. There is a dip in the center which provides a very low bowl, 12¾ in. high. This dip also elevates the front and rear of the bowl opening which, together with the rim wash operates to minimize the possibility of soiling. It is made in different styles to be grouped with matched sets. The manufacturer is Crane Co., 836 So. Michigan Ave., Chicago.

Coils for Use With Oil Burner

At the top of this page is shown a set of coils installed in the combustion space of a boiler. These are for the purpose of increasing the heating capacity of the boiler. Units are constructed so as to conform to the combustion chamber with adequate allowance for the travel of the products of combustion. The coils are made of copper. The unit is described as being capable of installation without interference or alteration to either boiler or oil burner. Prospect Thermo Unit, Inc., division of Prospect Boiler Co., of New Brunswick, N. J., is the manufacturer.

Automatic Electric Water Heater

Automatic hot water service by electricity has been designed for in the unit which is shown here and which has been placed on the market just recently. It is described as having an extra heavy storage tank, a bellows type snap-acting thermostat, heavy insulation, a hand-hole clean out, a pressure and temperature relief valve and krinkle finish jacket. The heating elements have been made replaceable without draining the tank. These heaters are made in six sizes and three models. Automatic control is afforded by a thermostatic water temperature regulator. Heat loss by circulation of the hot water has been designed to be minimized by what is called a build-in heat trap. This is indicated by the accompanying cross-section illustration and consists of a U-shaped pipe installed to prevent the hot water from rising into the circulating lines. The Cleveland Heater Co., 1900 West 12th Street, Cleveland, Ohio, is the manufacturer.



Meet our Field Force!

J. U. FARLEY

T. H. CRAIGE

G. F. HAGENDORN

We are proud of these representatives. They work *only* for the publishers of DOMESTIC ENGINEERING, and in turn are the *only* men authorized to take subscriptions for it.

Every man jack of them during his years with the Company has proved as loyal to the interests of DOMESTIC ENGINEERING's subscribers as he is to the publishers. And that is just the way we would have it.

During the year these representatives visit every state and thousands of towns and cities. They spend their days with plumbing and heating contractors, talking with them in their shops and on the job, and rubbing shoulders with them at local gatherings and state conventions.

J. R. LEWIS

J. L. GLYNN

The wide range of live news, information and opinion which they naturally pick up in this way, is fed back to the editors. It is one of the many close lines of communication which help make DOMESTIC ENGINEERING General Headquarters for plumbing and heating facts.

"NONE GENUINE WITHOUT THIS SIGNATURE"

Each man pictured here carries an identifying letter which he will show you on request. It verifies his authority for taking your subscription orders for DOMESTIC ENGINEERING, and it is signed by our president, thus

F. P. Keeney

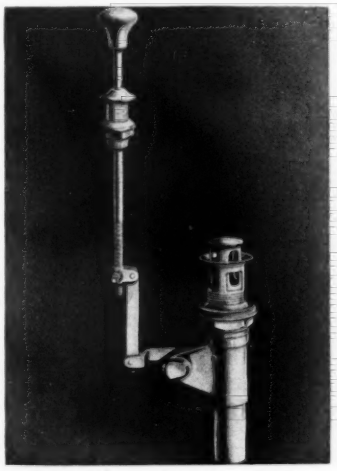
DOMESTIC ENGINEERING

T. J. FOLEY

E. W. BARNES

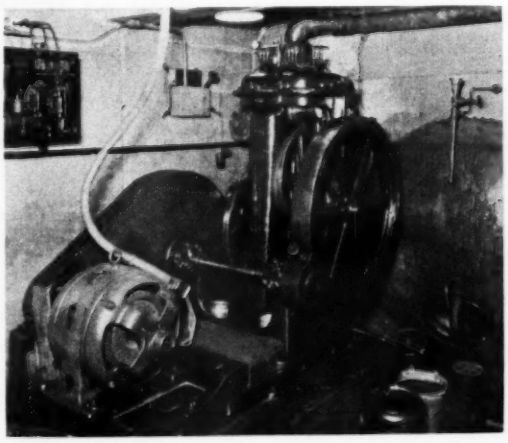
A Quick Acting Pop Up Drain

This quick acting pop up drain has been placed on the market for use with lavatories. A lever action lifts the drain plug from the seat to a height of five-eighths of an inch. It has been made so as to have no mechanism in the lavatory overflow which might obstruct the passage and collect sediment. It is described as being adjustable to different sizes and kinds of lavatories. Kohler Co. of Kohler, Wisconsin, is the manufacturer.

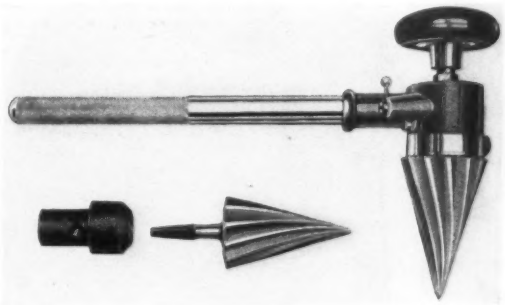


A Variable Volume Constant Pressure System

This water supply system has been designed to provide a flow at a constant pressure. The pumping unit is entirely automatic, the motor starting and stopping at predetermined storage tank levels. Regardless of the amount



of water stored, the domestic pressure is designed to be constant at all times and may be increased immediately to fire pressure for any desired period depending upon the storage capacity. The accompanying illustration shows a deep well installation. The discharge from this pump goes into the receiving tank which also is shown. From this tank, the water is taken by a booster pump. A motor driven air compressor and receiver is made to provide ample air to compensate for maximum peak drafts. The Luitwieler Corporation, located at 123 Ames St., Rochester, New York, is the manufacturer.

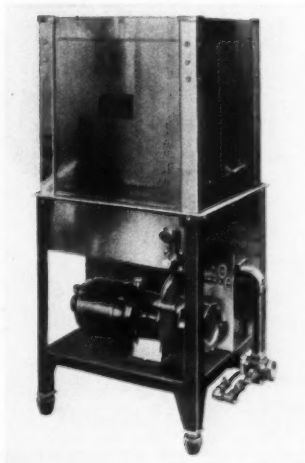


A Rachet Burring Reamer

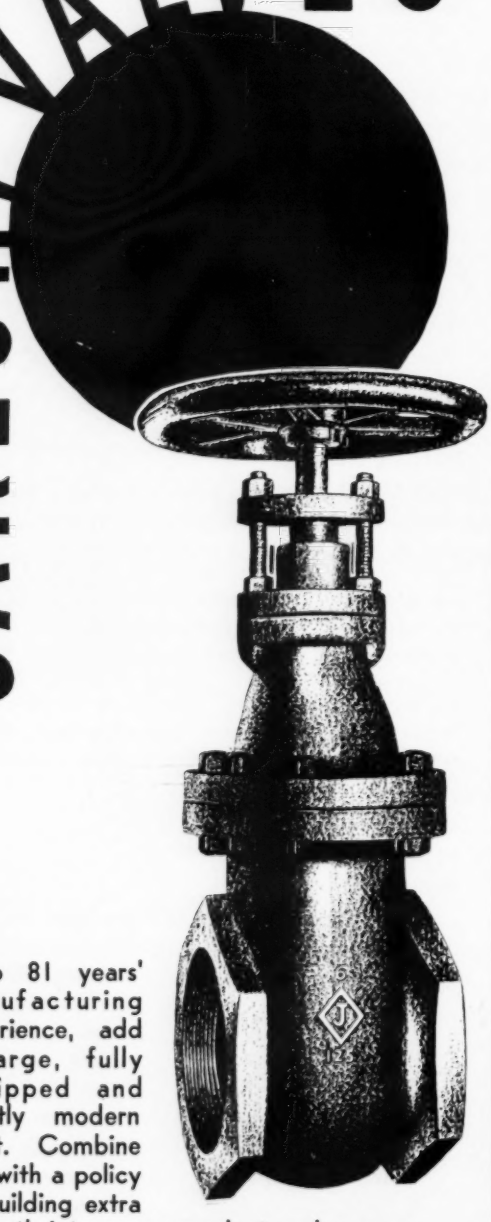
This ratchet burring reamer has been placed on the market for the purpose of removing burrs from the inside of pipes and for counter sinking. The reamer has spiral flutes which are designed to give it a shearing action and at the same time feed it into the burrs so as to reduce the pressure necessary on the stock. The ratchet head is completely enclosed so as to keep it free of dirt and burrs. While designed primarily for removing burrs from pipe 1¼ in. to 2 in. in size, it also can be used effectively for enlarging holes in sheet metal, for countersinking and for various other purposes. Greenfield Tap and Die Corporation located at Greenfield, Massachusetts, is the maker.

Dishwasher for Small Restaurant or Hotel

The dishwasher shown here has been placed on the market to serve as a high grade and efficient dishwashing unit for the small and medium sized restaurant, hotel, school and hospital. It is described as being compact in design. The scrap trays have been made to be easily removed for cleaning. The doors are designed to operate easily. A single control valve regulates both the wash and rinse sprays. The motor and pump are operated on a single base with a continuous shaft running through the motor and pump. The feet are adjustable. The spray tubes have been made with large openings and these tubes are



JARECKI VALVES



To 81 years' manufacturing experience, add a large, fully equipped and strictly modern plant. Combine this with a policy of building extra strength into every product and a practice of testing valves far *beyond* their working pressure ratings—and you soon understand why Jarecki Valves are uniformly sound in design, perfect in condition and economical in service. A complete line at your service.

JARECKI MANUFACTURING COMPANY
ERIE, PA., U.S.A.

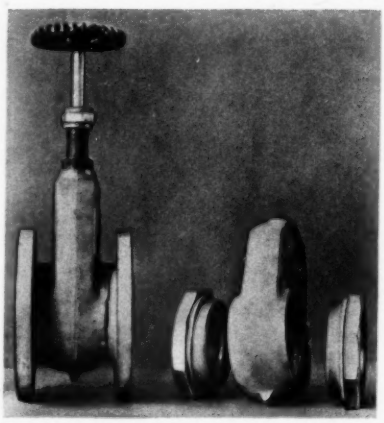
removable for cleaning. The unit is further described as being available for either corner or straightaway installations, in galvanized iron, copper or monel metal. Colt's Patent Fire Arms Manufacturing Co., located at Hartford, Connecticut, is the maker.

A Small Size Washing Machine

This washing machine has been designed primarily to take care of the in-between washes in the home particularly where there are babies or small children. Also it is described as being adapted for washing fragile clothing. In this new machine the motor is mounted in rubber to reduce noise. The unit is portable and the vacuum action principle of agitation is used in it. In addition clothes can be boiled in the tub. In operation, a fan creates a vacuum above the water in the inner chamber thus causing the water to rise. The water level in the outer chamber drops accordingly to a point where atmospheric pressure forces air underneath the partition between the inner and outer chambers. The result is that the air rushes upward through the clothes in a torrent of bubbles. The manufacturer is The Black & Decker Mfg. Co., Towson, Maryland.

Quick Opening Gate Valve

One of the outstanding features of this valve is that the valve disc is installed through the flow passage, thus eliminating the bolted or threaded bonnet. Two sets of opposed threads operate to lift the disc twice as fast as the stem. The disc is of the self-aligning type and the disc seats are integral with the flanged or threaded ends. The 2½-in. sized valve in aluminum weighs six pounds and in bronze weighs thirteen pounds. The maker is Shand and Jurs Co., Carlton and 8th Sts., Berkeley, California.



SUPPLY NEWS

Month's Developments among Manufacturers, Wholesalers and Salesmen in All Sections

Central Supply Association to Hold Local Meetings

In place of the annual spring meeting of the Central Supply Association, it has been decided to hold a number of local meetings throughout its territory. In some cases it may be that members from several states will be invited to attend one such meeting. Following its usual custom, the association will hold its annual meeting in Chicago in the fall, the dates will this year be October 25 and 26, according to Secretary W. E. McCollum of Chicago.

Hotstream Heater Co. Expanding

The Hotstream Heater Company of Cleveland, Ohio, has just completed arrangements to move into new quarters where it will have room for expansion. The company has secured a lease for 40,000 sq. ft. of space in a building at Grand avenue and Ewald avenue, S. E., owned by the Van Dorn Iron Works Co. The space is on the first and second floors, is served with elevators and has a direct siding on the Pennsylvania Railroad.

In March the Hotstream Heater Co. will consolidate in this space its two plants now at 7800 Finney avenue, S. E., and at 9502 Richmond avenue, S. E., including the equipment of the American Water Heater Co. in St. Louis, which the company purchased last fall and recently moved to Cleveland. The Hotstream Heater Co.'s products are hot water heaters, both automatic and non-automatic.

Jobbers Credit Association, Inc., Elects Officers

Jobbers' Credit Association, Inc., recently held its annual meeting at the Hotel Commodore in New York City and elected the following officers for the ensuing year:

President, A. M. Behrer, vice president of Behrer & Co., Inc.

First vice president, T. Arthur Johnson, vice president, J. D. Johnson Co., Inc.

Second vice president, Henry D. Gasner, secretary of Saltser & Weinsier, Inc.

Secretary, Glenn B. Van Buren.

Treasurer, Mortimer H. Smolka, vice president of E. Smolka Plumbing Supply Co., Inc.

Board of directors: P. Ralph Mork, vice president, Crane Co.; Leo M. O'Neil, president, M. O'Neil Supply Co.; Henry D. Gasner; Bryant F. Gilmour, vice president, B. F. Gilmour Co., Inc.; Edward Schwartz, president, E. Schwartz Plumbing Supply Co., Inc.; Milton M. Goldsmith, vice president, Sam S. Glauber, Inc.; John Harmon, vice president, Nason Mfg. Co., and T. Arthur Johnson.

Quaker City Jobbers Elect Officers

The Quaker City Plumbing Jobbers Association of Philadelphia held its annual election recently with the following result: President, Benjamin Landers; vice president, Joseph Ferber; treasurer, Rufus Palmer; secretary, Jos. Weinstein. Members of the board of directors will be elected later.

Plumbers' & Factory Supply Co. Moves to Larger Quarters

The Plumbers' & Factory Supply Co. of Columbus, Ohio, formerly located at 33-45 East Spring street, is moving to larger quarters at 41-43 West Vine street. This company was organized 40 years ago, and its officers are: Ross J. Burns, president; John Lutz, Lancaster, Ohio, vice president, and Mrs. W. A. Brubacher, secretary and treasurer.

Will Manufacture Oil Burners

Bland Range Oil Burner Company of Hartford, Conn., has been incorporated with a capital of $60,000, to manufacture oil burning equipment. The incorporators are L. Reina Bland and A. S. Hyman.

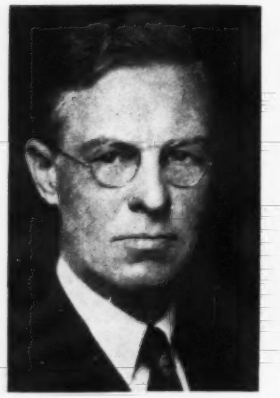
Has Opened Warehouse in Philadelphia

National Radiator Corporation of Johnstown, Pa., has opened a warehouse in the Milne building on Washington avenue, between Tenth and Eleventh streets in Philadelphia, Pa., where a complete stock of the company's boilers, radiators and specialties will be carried.

Superior Specialty Co. Starts in Business

Superior Specialty Company has been organized by W. Evans Barrett and has started in business at 2203 West Grace street, Richmond, Va., handling a line of plumbers' specialties, with Virginia and nearby states as its territory. Mr. Barrett is well known to the trade in that section, having covered the states of Virginia, North Carolina and South Carolina since 1913, calling on plumbers for the old Haines, Jones & Cadbury Co. of Richmond, Va., until 1923 and since then for the James Robertson Mfg. Co., also of Richmond, Va.

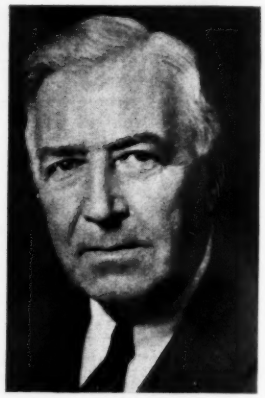
Photographs by Associated Illustrated News Service



R. C. Twichell
President

L. E. Page
Vice President & Secretary

James H. Shenton
Vice President



M. S. Hart
Chairman of Board

Officers of the Hart, Cooley, Highton Company of New Britain, Conn.

Kohler Co. Takes Larger Warehouse in Philadelphia

Kohler Company of Kohler, Wis., has leased a one-story brick building at the northwest corner of "F" and Atlantic streets in Philadelphia, for warehouse purposes. The dimensions of the structure are 180x340 ft., with 68,000 sq. ft. of floor space, enabling the company to carry a large stock of its products in Philadelphia. This new warehouse is located on the New York division of the Pennsylvania railroad in the heart of the northeast industrial district in Philadelphia. The company's showroom and branch office will remain at Seventeenth and Sansom streets. H. H. Held is manager.

Its Boston Office Is in a New Location

Malleable Iron Fittings Company of Branford, Conn., has moved its office in Boston, Mass., from 11 Beacon street to 80 Broad street. Edmund Henry is in charge.

International Heater Co. Elects Officers

The International Heater Company of Utica, N. Y., held its annual meeting recently and elected the following officers and directors for the coming year: President, J. A. Danquer; vice president, L. R. Taylor; secretary-treasurer, I. L. Jones; assistant treasurer, R. L. Griffiths; assistant secretary, H. A. Chester. Directors: W. T. Baker, Beecher M. Crouse, J. A. Danquer, I. L. Jones, J. F. Hubbel, Edward Norris and L. R. Taylor.

Charles Millar & Son Co. Elects Officers

Charles Millar & Son Co., wholesale dealer in plumbing and heating supplies, at Utica, N. Y., recently held its annual meeting and elected the following officers and directors for 1933: President, Charles Millar; first vice president, David S. Howard; second vice president, Richard U. Sherman; treasurer, Alfred H. Dobson; secretary and assistant treasurer, William Girvan; sales manager, Lynsday D. Fowler. Directors: Charles Millar, Alfred H. Dobson, Richard U. Sherman, David S. Howard, Lynsday D. Fowler, Walter R. Jones and William Girvan.

Now Consolidated Under the Name of The Hart, Cooley, Highton Co.

To facilitate the combining of their various manufacturing departments and sales branches, The Hart & Hutchinson Company and the Wm. Highton & Sons Division of the Hart & Cooley Mfg. Company have been consolidated under the name of The Hart, Cooley, Highton Co., with main offices in New Britain, Conn. There will be no change in the personnel or in the service. The officers are: President, R. C. Twichell; vice president and secretary, L. E. Page; vice president, James A. Shenton, and chairman of the board, M. S. Hart.

Standard Sanitary Mfg. Co.'s Headquarters in San Francisco Moved

The Standard Sanitary Manufacturing Co. has moved its headquarters in San Francisco from Fourth and Townsend streets to 349 Sutter street, where its showroom is located. Benjamin F. Blair is manager of the San Francisco office.

M. L. Oberdorfer Brass Co. Elects Officers

The M. L. Oberdorfer Brass Company of Syracuse, N. Y., held its annual meeting recently and elected the following officers for the ensuing year: Joseph L. Goodman, president; Harold P. Dingney, vice president; James M. Scott, secretary and treasurer.

Evins F. Glore & Son, Inc., Move Offices

Evins F. Glore & Son, Inc., have moved their offices from the Grand Central building, New York, to Manley street and Anable avenue, Long Island City, N. Y.

Cowan Sales Co. Expanding

Cowan Sales Co. of 30 Church street, New York City, has announced the addition of two sales representatives to its organization, Tom Douglas and Nat Slaff. Mr. Douglas was for six years connected with the Standard Sanitary Mfg. Co. at its Newark, N. J., plant, and Mr. Slaff was for three years with the Utility Plumbing Supply Co. at Belleville, N. J.

Ohio Brass Co. Elects Officers and Directors

The Ohio Brass Co. of Mansfield, Ohio, recently held its annual meeting and elected the following officers and directors: Chairman, Frank B. Black; president, Charles K. King; senior vice president, Harry S. Black; secretary, George L. Draffan; treasurer, William A. Springer; factory manager, Louis W. Olson; general sales manager, J. Martin Strickler. Directors: Frederic Attwood, Robert B. Black, Robert J. Deneen, Walter T. Jameson, George A. Mead, Edward F. Wickwire, Arthur O. Austin, Reid Carpenter, Nathan M. Garland, Merrill W. Manz, William M. Weldon, Sr., and Arthur L. Wilkinson.

Hart & Crouse Co.'s Annual Election

Hart & Crouse Co., manufacturer of heating boilers and heating equipment at Utica, N. Y., held its annual meeting recently and elected the following officers and directors: President and treasurer, James L. Lally; vice president, R. E. Crouse; secretary, A. G. Senior. Directors: John L. Train, T. J. Harrington, R. E. Crouse, A. G. Senior, M. K. Hart and James L. Lally.

Will Manufacture Metal Partitions

The Carpenter Metal Products Company of Cleveland, Ohio, which was recently incorporated to manufacture a varied line of metal specialties including partitions for toilets and showers, has taken manufacturing and office quarters in the building at 13001 Taft avenue in that city. The officers of the company are: R. F. Carpenter, president and treasurer; Ed. Welles, vice president, and M. H. Ralph, secretary. Mr. Carpenter has had twenty-five years' experience in the metal partition business, most of it as president of the Sanymetal Products Company of Cleveland.

Blake Increases Sales Force

John Heinkel, president of the Blake Specialty Co., Rock Island, Ill., manufacturer of plumbing fittings, announces adoption of a new plan of handling its sales. The country has been divided into four major territories, each with a supervisor in charge who understands both sales and installation problems.

George H. Quest, treasurer of the company, has moved to Washington, D. C., to take charge of the ten men in the Atlantic coast division. New men have been added to the company's force, including William J. Bapst of New York for the metropolitan district; S. G. Anderson of Seattle, Wash., for the northwest; W. P. Gahan of Birmingham, Ala., for Alabama and H. A. Green for the Boston territory.

B. J. Mulcahey of Minneapolis, Minn., takes charge of the Twin Cities district succeeding Mr. Quest.

To Make Large Cold Rolling Mill for Gary, Ind.

The construction of a half-million dollar cold rolling mill has just been started at Salem, Ohio, for the Gary, Ind., plant of the American Sheet & Tin Plate Company, a subsidiary of the United States Steel Corporation. The E. W. Bliss Co. is building the mill.

FIRST TIME IN HISTORY
A Turbine-type Water System priced for piston pump competition.

Get Ready for

SPRING PROFITS

WESTCO Makes Money for its DEALERS

THE big season for water system PROFITS is just starting.

Why not get the lion's share of it in your locality with Westco? Men, here's a simple, Turbine-type Water System you can sell with the utmost confidence. Unrivalled performance — Money-back Guarantee and Trouble-free Performance are just three of the many talking points that close sales for Westcos.

There's no short discounts when you handle the Westco line. Your *full profit* is protected. You get an exclusive Dealer Franchise in your territory.

New Patented Feature

Another selling feature is Westco's *patented* Removable Liners which allow the pump's capacity to be increased or decreased without disturbing the installation. These Liners also protect the pump casings from any possible wear—thus insuring lifetime service for the castings.

All Westcos have Automatic Air Volume Controls; are Self-priming and quiet in operation. No water hammer or pounding in the pipes. *Suction lift of 28 ft.*

No Costly Servicing

Only one moving part—the Impeller which operates without metal-to-metal contact. Such utter simplicity is the reason for this pump's reputation for trouble-free operation. And that's why Westco profits are never eaten away by costly service trips. F. F. Smith & Co. Inc., of Sacramento write:

"Sold between 400 and 500 outfits in 8 years. All of which are giving complete satisfaction."

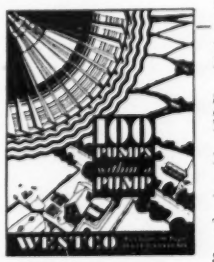
Complete range of sizes with capacities from 250 to 3,000 gallons per hour. Electric Motor or Gasoline Engine Driven. Annual lubrication only attention necessary. Durable green and black enamel finish.

Disassembled view showing Westco's patented Removable Liners, Impeller and Casings

Do It Now!

Westco Franchises are *exclusive* Franchises. So, *act now!* Send in the coupon below for colorful Catalog, Prices and Details of our Dealer Proposition. There's no obligation.

WESTCO PUMP CORPORATION, Davenport, Iowa. *Branches:* New York, Philadelphia, Chicago and San Francisco. *Jobbers in 50 Principal Cities.*



COUPON *BRINGS* CATALOG

WESTCO PUMP CORPORATION
Davenport, Iowa, Dept. D-3

Gentlemen: Without cost or obligation, please send me colorful Catalog, Prices and Details of your Dealer Proposition for Westco Turbine Pumps and Water Systems.

Name .....

Address .....

Town .....

State .....

WESTCO *TURBINE* PUMPS

See for Yourself...

the Profit Possibilities of Bonalite Seats

Don't take our word for it—prove to your own satisfaction that Bonalite Seats offer you an exceptional opportunity to make a worthwhile profit.

There are a number of good reasons for this condition: Bonalite Seats have exclusive features and very attractive prices. They will open the pocketbooks of thousands of people who really need new seats but apparently have been waiting for a "better value."

Bonalite Seats are something new—different—they have sales features that make them easy to sell. The sheet covering is really *seamless* and is made possible by an exclusive patented process. The thickness of this sheet covering (see section of seat ring below) is also important. The patented core is exceptionally strong and moisture proof; the heavy brass hinge is chromium plated and highly polished. Every Bonalite Seat is guaranteed.

Go to your jobber and compare Bonalite Seats with all other sheet covered seats. Buy several Bonalite Seats—show them to your customers and explain their exclusive features. We are confident you will get the profitable response that has been secured by other plumbing contractors who have followed this suggestion.

AMERICAN RUBBER PRODUCTS CO.
8561 Butler Ave. Detroit, Mich.

BONALITE
"The only Seamless sheet covered seat"

Quaker City Jobbers Visit Plants of Eastern Foundry Co. and Peerless Heater Co.

Members of the Quaker City Jobbers' Association of Philadelphia, Pa., were guests of the Eastern Foundry Co. and the Peerless Heater Co. division of that company on Wednesday, February 1, on an interesting tour of their large plants located at Boyertown, Pa.

Under the guidance of Joseph L. Fritz and Ralph Sprowles, representing the Eastern Foundry Co. and the Peerless Heater Co., respectively, the members of the association made the trip from Philadelphia to Boyertown by a chartered bus. On their arrival they were conducted personally through the large foundries, machine shop, warehouse and offices, etc., by B. W. Frederick, vice president; George Harberger, sales manager; H. Trout, foundry superintendent; D. Burkett, vice president in charge of production; A. E. Oesterling of the boiler division, and E. Walt of the transportation department.

During the tour of the plant the visitors were given an opportunity to see how the various products, such as soil pipe and fittings, boiler sections, tank heaters and accessories, were molded in the flasks, and then they saw the pouring of iron and other processes until the product was finished.

After the trip through the plant, the guests were treated to an old-fashioned German chicken dinner, specially prepared for the occasion, at Hill Church, Pa., located up in the mountains back of Boyertown.

Following the dinner Mr. Frederick, acting as toastmaster, called on all present for a brief talk and all expressed their appreciation and gratitude for the interesting day and the splendid dinner.

Those present—in addition to those already mentioned—were: L. W. King, Robert Savill, E. S. Thompson, A. Lentz, L. Agostini, Joseph Weinstein, Jack Weinstein, David Schrull, Ben. J. Landis, Nat. Friedman, Jack Gross, Jos. C. Kohn, A. B. Seither, Peter Guauo, E. P. Graber, H. Mac Crae, Wm. Rigberg, Wm. Beckhoff, A. Di Mario and H. J. Carr.

Appointed Distributors for American Rubber Products Company

American Rubber Products Co. of Detroit, Mich., manufacturer of closet seats, has just announced the appointment of the following distributors in the territories indicated:

A. W. Gill, Rocky Mount, North Carolina—Virginia and North Carolina.

J. W. Hughes, 77 Wellington Road, Buffalo, N. Y.—New York State with the exception of Greater New York district.

J. Nelson Company, 1758 South 6th street, East, Salt Lake City, Utah—Utah.

A. P. Christian, 18048 Northlawn avenue, Detroit, Mich.—Western Pennsylvania, West Virginia and southern Ohio.

B. J. Clark, 272 Mount Airy avenue, Paris, Ky.—Tennessee and Kentucky.

R. Collins, 4277 East 49th street, Cleveland, Ohio—Northern Ohio.

Harry G. Nye, Nationally Known Manufacturer, Dies

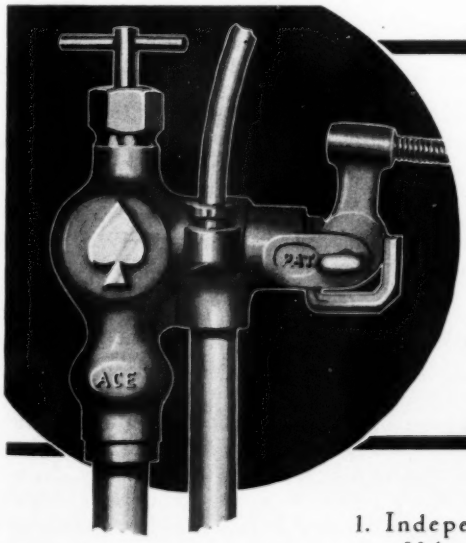
Harry Gale Nye, head of the Nye Tool & Machine Works, Inc., Chicago, and one of the best known manufacturers in the plumbing and heating industry, died suddenly Feb. 7. He was the victim of heart trouble, succumbing to an attack a few minutes after leaving his office for lunch and passing away a few hours later at the hospital to which he had been taken.

He had established his mark on the industry in a manner distinctively his own. Possessor of an unusual ability in writing letters which combined witty comments on current events and topics with apt sidelights on the daily work and affairs of the heating and plumbing contractor, he quickly won a nation-wide audience. The letters, originally sent to his customers, were for many years the keynote of his advertising in DOMESTIC ENGINEERING and attracted attention not only in this country but in Europe, South Africa, Australia and the Orient.

On the walls of his office, Mr. Nye had framed a letter from President Calvin Coolidge. In a humorous vein, Mr. Nye had written of what a plumber would do if he were President and Mr. Coolidge wrote "I have greatly enjoyed it and hope that I shall be able to do something along these lines, even if I cannot qualify as a member of this profession."

Mr. Nye was born in Richmond, Ind., in June, 1873. His family had been tool makers, and in later years Mr. Nye secured several hand made tools made by his grandfather Zadock Allen Nye in 1835. He served as a salesman and as sales manager of the International Silver Co. In 1904, he began to manufacture pipe threading and cutting equipment, incorporating the company in 1906. His first plant was on Canal street in Chicago, his second on Jefferson street from 1912 to 1925 during

Harry Gale Nye



THE ACE BALL COCK
—*Quiet at All Pressures*

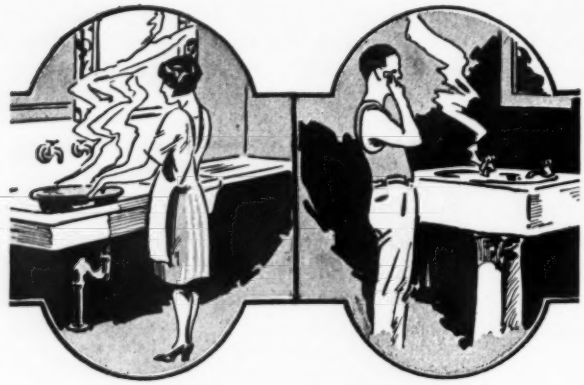
By turning the cross head lever, this ball cock can be adjusted to quiet action at any pressure. It is possible to meet the requirements for all water closets—all communities—all water supplies, in this one valve.

There is no single quality so desirable to a ball cock as this one —quiet action at all pressures.

Six Important Points

1. Independent Shut-off—Two Valves in One.
2. Pressure Control Valve—Quiet at All Pressures.
3. Steam Bronze Castings—Every Ball Cock Tested.
4. Roller Bearing Action—Leverage Ratio is Doubled.
5. Renewable Chromium Seat—Monel Metal Bibb Screw.
6. Patent Protected and Packaged—Priced for an Honest Profit.

NORTHERN INDIANA BRASS CO.
ELKHART INDIANA



KING
Tank Heaters

at the very lowest fuel cost are supplying plenty of hot water for thousands of home folks.

KING
Tank Heaters

are made in a wide range of sizes . . . *They help balance the household budget.*

Oakland Foundry Co.
BELLEVILLE ILLINOIS

which time he successively took over more floors of the building until in 1925 he built the modern plant which the Nye Tool and Machine Works now occupies at 4120 Fullerton Avenue, Chicago.

He traveled a great deal, calling for many years on the trade throughout the country and in later years making several trips abroad. He was an enthusiastic hunter and also was greatly interested in art. For years, he had given prizes to Indiana art students and his office has many pictures testifying to his love of art. He was a member of the Sons of the American Revolution and of the General Society of Mayflower Descendants. He also had served as a member and officer of the Central Supply Association.

Mr. Nye is survived by his wife, two sons, Harry Gale Nye Jr. and Americus P. Nye, and one daughter, Julia Nye. His funeral was attended by a large number of friends representing every branch of the industry.

The Nye Tool and Machine Works points out that the organization which Mr. Nye had built up and which includes executives who have been with the company for many years, will carry forward the business under the same policies. Harry Gale Nye Jr., who has been associated with his father in the business for the past two years, will be personally active. The board of directors, consisting of Harry G. Nye Jr., O. S. Lee, secretary and general manager, and William J. Grede, president of the Liberty Foundry Inc., Wauwatosa, Wisc., and of the Spring City Foundry Co., Waukesha, Wisc., will continue to direct the policies and general management of the business through Mr. Lee, who has been with Mr. Nye for the past twenty years and had taken over the general management several years ago.

Death of Frederick P. Bowden

Frederick Prescott Bowden, president of the Burnham Boiler Corporation of Irvington-On-Hudson, N. Y., died recently at his home in Melrose, Mass., at the age of 64 years. Mr. Bowden succeeded the late William A. Burnham as president of the Burnham Boiler Corporation and other affiliated companies in 1923. He is survived by his widow, daughter and four sons.

Death of Hervey Eugene Keeler

Hervey Eugene Keeler, formerly manager of the Chicago office of Ludlow Valve Mfg. Co., died at his winter home in Honolulu, February 10, in his 79th year, and was buried from his home in Wilmette, Ill., February 20. Mr. Keeler was born in Seneca Falls, N. Y., and received his education in the local public schools and in Williams Business College. He was connected with the Chicago office of National Tube Works for 30 years, and he opened and was manager of the Chicago office of the Ludlow Valve Mfg. Co. of Troy, N. Y., for fifteen years. He also built and was president and general manager of the Rogers Park Water Works until it was sold to the city of Chicago in 1907. He was a member of the American Water Works Association, a 33d degree Mason, and had held many Masonic offices. For the last ten years he had been in the habit of spending the winters in Honolulu, accompanied by his wife, who survives him, as does also a daughter.

Business Personals

W. M. THOMPSON, general sales manager of J. B. Wise, Inc., of Watertown, N. Y., recently spent a few days in the South with their southern representative, Ford H. Pratt of Atlanta, Ga.

WALTER M. SCHILDMAN, former manager of the National Radiator Co., has been appointed special representative for the Akron branch of the Pierce, Butler & Pierce Mfg. Corp. He will make his headquarters at Norwood, Cincinnati, Ohio.

BERNARD J. LEE, JR., formerly assistant manager of Jenkins Brothers, Inc., Bridgeport, Conn., has been elected vice-president and appointed general manager of the Bridgeport plant to succeed the late Charles Valentine Barrington.

F. C. EIBELL, for the past four years manager of the advertising and publicity department of the Worthington Pump and Machinery Corporation of New York City, has resigned. No announcement has been made about his future plans.

H. M. GASSMAN, for many years sales representative for blowers and steam turbines for Coppus Engineering Corporation of Worcester, Mass., in the Alabama territory, has been appointed sales representative in that district for this concern's new dry type of air filters. Mr. Gassman's headquarters are at Tenth avenue and Fourth street, N. W., Birmingham, Ala.

W. POOLE DRYER, who has been specializing on engineering of steam turbine plants, has joined the staff of the power plant engineering concern of Arthur L. Nelson, Park Square Building, Boston, Mass.

J. A. WADDELL, who has been chief engineer for the Spencer Heater Company at Williamsport, Pa., for the last seven years, is moving to Chicago where he will be in charge of the company's sales development in the middle west. He will direct distribution of magazine feed coke burning boilers and the company's combination stoker and boiler for the burning of bituminous coal.

J. A. Waddell

HERB COATS, formerly with the Black & Decker Mfg. Co. and the Van Dorn Electric Tool Co., both of Towson, Md., has been appointed Pacific Coast representative for the Standard Electric Tool Co. of New Britain, Conn., with headquarters at 576 Monadnock building, San Francisco, Calif.

HERBERT LETCHER has been added to the staff of the Akron, O., branch of the Pierce, Butler & Pierce Mfg. Corporation, as city salesman.

C. H. CHAMPLAIN has just been appointed general works manager of the Westinghouse Electric and Manufacturing Co. at East Pittsburgh, Pa. In his new position, Mr. Champlain will supervise the management and operation of the nation-wide plants of the Westinghouse Company. He started with the company in 1898 as a machinist, and he has held all the positions that make up the factory grades. With 35 years experience in managing factory operations, he is now in charge of all Westinghouse plants.

JOSEPH MAYNARD, president of the Boston Brass Co., Waltham, Mass., together with Mrs. Maynard are returning from a trip to Cuba. Mr. Maynard was very active in the recent presidential election, being chairman of the Massachusetts Democratic committee. His friends are of the opinion that he will most likely be appointed Collector of the Port of Boston, Mass.

ROBERT D. BLACK has just been appointed sales manager of the Black & Decker Mfg. Co. of Towson, Md. Mr. Black has a background of shop experience, plus years as a salesman and later as branch manager of sales in the Pennsylvania territory. In addition to this training, he also served as advertising and sales promotion manager. He is thus well qualified to manage the sales problems of this company.

Robert D. Black

WALTER E. VOISINET, Curtiss building, Buffalo, N. Y., has been appointed sales representative in Buffalo and vicinity for the heating and air conditioning department of the Dail Steel Products Co. of Lansing, Mich. Mr. Voisinet is an experienced heating, ventilating and air conditioning engineer.

A. V. HUTCHINSON of New York City, secretary of the American Society of Heating and Ventilating Engineers, and Miss Janice Barr of Chicago were recently married in the latter city.

FERD WARNKEN, who has been associated with the Jas. Robertson Mfg. Co. of Baltimore, Md., for twenty-six years, has joined H. E. Peddicord & Co., Inc., the new supply company in that city, in the capacity of vice president. Mr. Warnken is one of the best known supply men in Baltimore.

HARRY J. HANAHAN of Hanahan Co., Inc., Long Island City, N. Y., was the recipient of many congratulations on the fiftieth anniversary of his birthday which occurred in February. Mr. Hanahan has been connected with the wholesale plumbing and heating business for many years, and he has a large circle of friends in the trade.

J. A. LATTNER, secretary-treasurer of the Century Engineering Corporation of Cedar Rapids, Iowa, has just returned from a trip through the eastern states. He says that most of the men he met have ceased discussing the depression, and are figuring ways to get

KOVEN RANGE BOILERS

. . . Make friends for Plumbers wherever installed!

Just make sure the KOVEN label is on the Range Boiler you get from your jobber—and your worries are over. That label guarantees quality materials, expert workmanship and careful testing.

Thus, when you install a KOVEN RANGE BOILER, you have done a service to your customer—and to yourself. There is no better boost for your shop than to have

EVERY CUSTOMER THOROUGHLY SATISFIED

Satisfied customers and a good profit from each KOVEN installation, are the reasons for the leadership of KOVEN RANGE BOILERS in the plumbing trade.

The same is true of
KOVEN STORAGE TANKS
and other products.

Specify KOVEN when ordering thru your jobber.

KOVEN QUALITY PRODUCTS

Range Boilers
Storage Tanks
Koven-Paracoil Tanks
Septic Tanks

TRADE MARK
L.O.K. & BRO. INC.

Fuel Oil Tanks
Expansion Tanks
Pneumatic Tanks
Barber Boilers
Scullery Sinks

L.O. KOVEN & BRO. Inc.
154 OGDEN AVE. JERSEY CITY, N.J.

ahead in 1933, and at the same time looking for better times.

H. L. FISCHER, formerly with Thomas E. Murray, Inc., and Crane Co., has been appointed district manager of the New York office of the Shaw-Perkins Mfg. Co., of Pittsburgh, Pa. This office is located at 55 West 42nd street.

Eastern Trade Golf Association Holds Annual Meeting

The Eastern Trade Golf Association held its annual meeting Wednesday noon, February 15th at the Building Trades Club, New York City. There was an unusually large number of members present and everyone thoroughly enjoyed the meeting. A delightful lunch was served, after which the business of the meeting was conducted.

Officers were elected for the ensuing year as follows: President, Arthur R. Glore; vice president, F. A. Murray; and R. G. Bookhout was elected secretary and treasurer for his nineteenth consecutive term. J. B. Garfield was re-elected captain and the following were appointed as directors of the association: L. B. Harrison, Edw. C. Shepard, George R. Galbraith, Donald M. Fagan and Edw. Bauman.

The secretary and treasurer made his respective reports for the previous year and for the financial condition of the club, and these reports were passed upon as read. During 1932, thirteen new members were added to the association and twenty-two were lost, making a total membership to date of 125 active members and 12 honorary members.

Captain J. B. Garfield read a humorous and interesting history of the six matches held during the 1932 season.

The handicap committee, consisting of Messrs. Garfield, Hubbard and Townsend, was reappointed for the 1933 season. This body of men presented the association an interesting and complete record of the score of every member of the association in every meet conducted during recent years.

The choice of courses for the coming season was left up to the discretion of the tournament committee, consisting of H. W. Reese, John Kjerner, E. H. Page and B. S. Bacon.

The new president, upon taking the chair, made a call for the donation of prizes for the several tournaments. J. M. Heatherton, offered a prize for one of the tournaments. Mr. Hinrichson agreed to continue the same interesting prize idea which he donated last year, consisting of two prizes played for by eight players who are selected by taking the average of their two lowest net 18-hole scores for different courses for the first four meets. This prize is awarded at the end of the September meet. Evins F. Glore, father of the 1933 president, made the suggestion that they hold at least one meet during the year to which the honorary members be invited and that the honorary members contribute a prize for this meet. This suggestion was acted upon and approved. The date of the meet will be set later.

The meeting ended at about three o'clock and the members left anticipating another successful year of interesting and enjoyable tournaments.

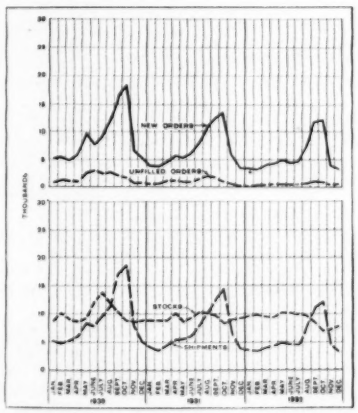
MARKETS

Reports on business conditions from large jobbing centers . . . Production figures

OUTSIDE the plumbing and heating industry, prospects for building work have shown no change during the month. Reports of new work continue to range along low levels. It is a case of going after what work is offered while corrective movements straighten out basic conditions, while the mortgage situation is slowly cleaned up and until more confidence revives home and commercial building.

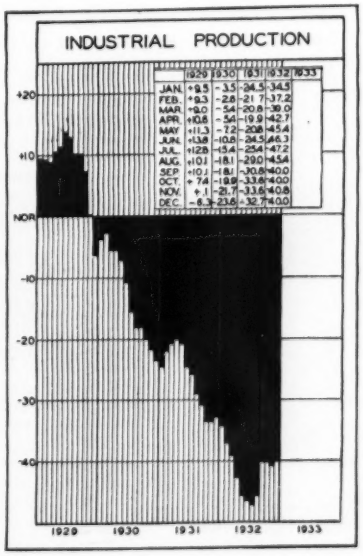
Within the industry, prospects have brightened somewhat. A united front is being prepared for drives to get remodeling work with more organizations promoting the same program. This means more results for each individual who goes after such work.

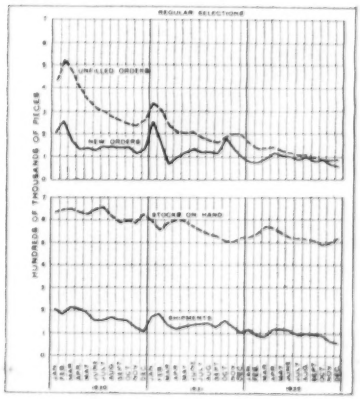
The price situation in the industry is unsettled. Reductions announced in January by several leading manufacturers on important lines were only the forerunner to further cuts in February. The present scale is said to offer makers no profit and the distributing branches, both wholesale and retail, have smaller discounts to apply against reduced prices. The discount situation continues undetermined with some large makers offering larger discounts to retailers than were outlined in last summer's announcements.



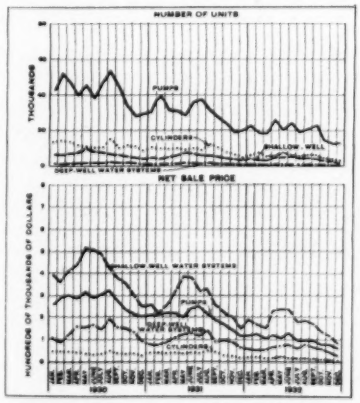
Oil Burners

Production and shipments as compiled by the bureau of the census. The chart below brings up-to-date the 150-year business chart published a few months ago.

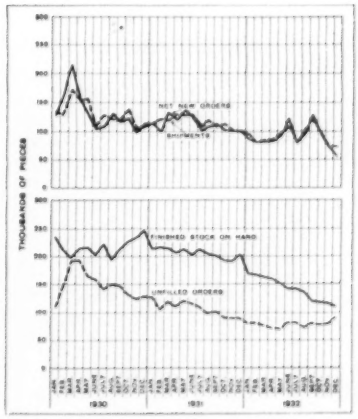




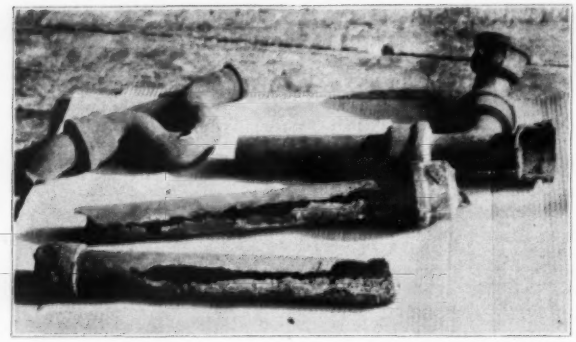
Vitreous-China Plumbing Fixtures



Domestic Pumps and Water Systems



Plumbers' Woodwork



This Drain Pipe Couldn't Stand THE ACID TEST

You've seen lots of drain pipe like this . . . it is being yanked out of buildings every day . . . full of pits and holes . . . just eaten out with corrosion. It just isn't meant for acid wastes.

This particular pipe was taken from a new chemical laboratory opened in 1929. In 1931-32 trouble started. Sink tail pieces, traps and horizontal runs under the tables started leaking. Plaster covering stacks and vertical runs started to show discoloration.

Temporary repairs were attempted but it wasn't long before stoppages occurred in the lines and the leaks became so bad that changes had to be made quickly. Then Duriron Acid-Proof Drain-Pipe was installed.

There are probably chemical laboratories in your city right now, or other places where acids are used, that are waiting for someone to come and tell them about Duriron and quote prices installed. And your profit on a Duriron job is four times as great as on the same job in cast iron.

If we can be of help, call on us.

THE DURIRON COMPANY, Inc.
410 N. Findlay St. Dayton, Ohio

DURIRON ACID PROOF DRAIN-PIPE

Death of Charles V. Barrington

Charles V. Barrington, vice president of Jenkins Bros., Inc., of New York City, in charge of the Bridgeport, Conn., plant, died recently at his home in Bridgeport of heart disease following an illness of three weeks. Charles Valentine Barrington was born in Chicago 71 years ago, the son of the late Thomas Barrington, builder of the tramways of Dublin, Ireland, and a native of that country. Young Barrington was taken to Ireland as an infant and educated there. As a young man he returned to this country and served as accountant and auditor for the World's Fair & Columbian Exposition Commission in Chicago in 1893. Here he attracted the attention of R. T. Crane, the founder of Crane Co., who sent him to Russia where he made his headquarters at Moscow and St. Petersburg and performed many special missions of industrial importance for Mr. Crane and also for George Westinghouse of the Westinghouse Electric & Manufacturing Co. Later Mr. Barrington came to Bridgeport to negotiate the purchase of Eaton, Cole & Burnham Co. for Mr. Crane. After establishing the Crane plants in Bridgeport, Mr. Barrington became manager of Jenkins Bros.' plant in that city and later vice president in charge of the company's operations in Bridgeport.

Convention Dates

March 13 and 14.—KANSAS—The annual convention of Kansas Master Plumbers Association, at Hays, Kansas.

March 14 and 15.—NORTH DAKOTA—The thirteenth annual convention of the State Association of Master Plumbers of North Dakota, at Devils Lake, N. Dak.

March 14 and 15.—MAINE—The annual convention of the Maine State Association of Master Plumbers, at Falmouth Hotel, Portland, Me.

March 28.—MINNESOTA—The annual convention of the Minnesota Master Plumbers' Association at Minneapolis, Minn., with headquarters at the Curtis Hotel.

April 11.—COLORADO—The annual convention of Colorado Society of Sanitary and Heating Engineers, in Denver.

April 12.—E. S. A.—The regular spring meeting of the Eastern Supply Association, at the Hotel Astor in New York City.

April 17 and 18.—MISSOURI—The annual convention of the Missouri State Association of Master Plumbers, at Springfield, Mo., with headquarters at the Kentwood-Arms Hotel.

April 24.—OKLAHOMA—The annual convention of Oklahoma State Association of Master Plumbers, in Oklahoma City, Okla., at association headquarters, Tenth street and Robinson avenue.

April 25 and 26.—NEW YORK—The annual convention of the New York State Master Plumbers Association, at Buffalo, N. Y.

May 15, 16 and 17.—PENNSYLVANIA—The annual convention of the Pennsylvania Master Plumbers Association, at Scranton, Pennsylvania.

May 22, 23, 24 and 25.—CALIFORNIA—The annual convention of the State Association of Master Plumbers of California, at Los Angeles, Calif., with headquarters at Alexandria Hotel.

June 12, 13, 14, 15 and 16.—A. O. B. A.—The 10th annual convention and national oil burner show of the American Oil Burner Association, Inc., at the Hotel Stevens, Chicago, Ill.

June 19, 20, 21 and 22.—N. A. M. P.—The 51st annual convention and exposition of the National Association of Master Plumbers, at New Orleans, La.

June 25 to 30.—M. E. & P. E.—The Sixth Midwest Engineering & Power Exposition, at Coliseum, Chicago.

July 25-28.—H. P. C. N. A.—The 44th annual convention of the Heating and Piping Contractors National Association, at Chicago, Ill., with headquarters at the Hotel Sherman.

August 8, 9, 10 and 11.—A. S. S. E.—The annual convention of the American Society of Sanitary Engineering at Chicago, Ill., with headquarters at the Congress Hotel. The registration of members, friends and guests will take place on Monday, August 7.

THE TRADE

News of what plumbing and heating contractors are doing the country over

Defeat Effort to Repeal Kansas Merchandising Law

Efforts to repeal the anti-utility merchandising law of Kansas have just been defeated by the legislature of that state.

Two repealing measures were introduced into the state legislature. One was voted upon by the senate and killed by a large majority. The other was turned down by the house committee.

Ever since the passage of such legislation in Kansas and Oklahoma, efforts have been made to claim that it was failing to accomplish its purpose, to claim that independent dealers including plumbing and heating contractors were not benefiting and claiming that even these dealers were anxious to have the laws repealed.

Such statements have not been substantiated in the experiences and activities of plumbing and heating dealers. Carl McGregor, secretary of the Kansas Master Plumbers Association, writes DOMESTIC ENGINEERING that Kansas master plumbers did good work in helping to defeat the two repeal measures in Kansas.

One large utility has resisted the Kansas law, carrying its opposition to the courts. The utility has lost the case in lower courts, and the Kansas Supreme Court, after holding hearings, is now preparing its decision.

Georgia Officers Plan Convention

Officers of the Master Plumbers Association of Georgia are preparing for its annual convention which will be held in Macon in May. The definite date and program will be announced later.

Will Discuss State Code at North Dakota Convention

Members of the State Association of Master Plumbers of North Dakota will meet in Devils Lake on March 14 and 15 for their annual convention. One of the features of the program is to be a discussion of a state code in an effort to enlist greater interest in better plumbing regulations. George Casper of Devils Lake is president, M. M. Sornsin of Fargo is vice president and Peter W. Grady of Grand Forks is secretary-treasurer. These officers with Charles H. Wiley of Minot, Frank Gallagher of Jamestown and A. W. Hoppert of Wahpeton make up the board of directors.

Radio Tells of Advantages in Modernizing Now

Advantages of modernizing plumbing and heating equipment now when prices are low and standards of convenience and comfort are high, are being told over the radio. The Plumbing and Heating Industries Bureau has prepared broadcasts featuring that point and several broadcasts already have been given.

The first broadcast was made over a Chicago station during the convention in that city of the Illinois Association of Master Plumbers. The following week, President Edward B. Kleine of the National Association of Master Plumbers talked over a Milwaukee, Wis., station, the broadcast being an interview by a Milwaukee newspaper man. In his remarks, Mr. Kleine emphasized the sound business value of undertaking modernization now when so many conditions favored the buyer.

Some of the delegates and guests attending the annual convention of the Kentucky State Association of Master Plumbers, held in Frankfort, Ky.

National and State Officers Hold Successful Meetings in Indiana

National President E. B. Kleine, National Secretary Edward Frank, Illinois State President Henry P. Reger, National Director John J. Calnan, Past National Director Rupert Weber and Indiana State President Earl L. Clevenger recently held a series of meetings in the following cities in Indiana: Lafayette, Logansport, South Bend, Fort Wayne and Muncie.

These meetings were arranged by National Executive Secretary Jos. G. Hildebrand and Indiana State President Clevenger, and the audiences seemed to take a keen interest in the discussions and evidenced a desire to do all they could for the State and National associations.

A. S. S. E. to Meet in Chicago in August

The American Society of Sanitary Engineering will hold its annual convention in Chicago, Ills., August 7 to 11, with headquarters at the Congress Hotel. The registration of members, friends and guests will take place on Monday, August 7, and the convention will begin at 10 o'clock Tuesday morning, August 8. Other sessions will be held August 9, 10 and 11, with adjournment sine die on August 11.

It is expected that the convention this year will have even a larger attendance than heretofore owing to the fact the world's fair, the Century of Progress Exposition, will prove an additional attraction.

The local convention committee consists of George J. Dehn, general chairman, and Thomas J. Claffy, secretary.

Philadelphia Master Plumbers' February Meeting

The Philadelphia Master Plumbers' Association held its regular February meeting with President George M. Hicks in the chair. In opening the meeting he called attention to a circular, entitled "Why Are There Sanitation Laws in Philadelphia?", which is sent to every home in the city and which should help every registered master plumber in the "Remodeling Campaign."

Attention was called to a bill which is to be presented to the city council, providing for the addition of a $2-a-year service charge to water bills, for which the city would assume the expense of repairing or replacing property owners' service pipes. It was voted to have the legislative committee handle this matter and report to the association at its next meeting.

Walter Raid reported progress for the membership committee and added that he would like to see every member bring in a new member.

Ed. Quaid reported for the gas committee and spoke in glowing terms about the splendid co-operation which the Philadelphia Gas Works Co. is giving the master plumbers. He urged all members to attend the twelve sales conferences which are to be held in the office of the Philadelphia Gas Works Co. He also stated that this company is pleased with the co-operation it is receiving from the master plumbers, as it wants them to sell gas appliances, while the gas company will sell gas only.

Harry L. Stilwell, chairman of the educational committee, suggested that a question box be put in operation at the next meeting, and his suggestion will be carried out.

Mr. Stilwell then introduced M. Masby of the Standard Wall Covering Co., who spoke on "How Plumbers Can Secure Extra Profits and Jobs by Pushing the Sale of Wall Coverings for Bathrooms and Kitchens."

The meeting was favored with a large attendance.

Buffalo Master Plumbers Elect Officers

Officers elected by the Master Plumbers Association of Buffalo, N. Y., at a meeting Feb. 9, follow: President, W. Frank Clucas; vice president, William Ludlow; secretary, William G. Maurer; treasurer, William Dechert; directors, Fred N. Jones, William C. Maunz and Allan A. Westphal. In his annual report, President Clucas, who also is secretary of the New York State Master Plumbers Association, called attention to the state convention of the association which will be held in Buffalo, April 25-26, and urged the members to make every effort so that this will be a memorable meeting. He praised the work of Henry Ritter, also a Buffalonian, as president of the state association.

Waterloo, Ia., Scene of Meeting of Northeastern Iowa Sanitary & Heating Club

The Northeastern Iowa Sanitary and Heating Club recently held its regular meeting at Waterloo, Iowa. Among many other discussions pertaining to the betterment of the plumbing and heating industry, the matter of pricing fixtures on display floors of manufacturers and jobbers as well as national advertising of resale prices of fixtures were given consideration.

Most of those present at this meeting were opposed to the marking of resale prices on fixtures on the display floors of manufacturers and jobbers, and they were also opposed to any advertising of resale prices in any national magazines or papers.

To Give Short Course in Heating at Lansing, Michigan

The second short course in forced warm air heating will be given at the Michigan State College in Lansing, Mich., on March 28, 29 and 30, and it is possible that a fourth day may be added, when the final program has been arranged.

The tentative program calls for sessions on the following subjects:

Estimating Heat Losses and Discussion of Troubles.

Estimating Duct Sizes. Discussion. Register Temperatures. Troubles.

Laboratory Demonstrations.

Fan Characteristics and Pressure Losses. Filters, Washers, etc.

Furnace Controls—Coal Fired—Gas or Oil Fired. Discussion of Furnace Sizes.

Humidification and the Comfort Zone. Types of Equipment.

Heat Removal in Cooling—General Considerations and Calculations.

The first short course held last year drew men from Michigan, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin and Massachusetts.

Minnesota Master Plumbers to Hold One-Day Convention

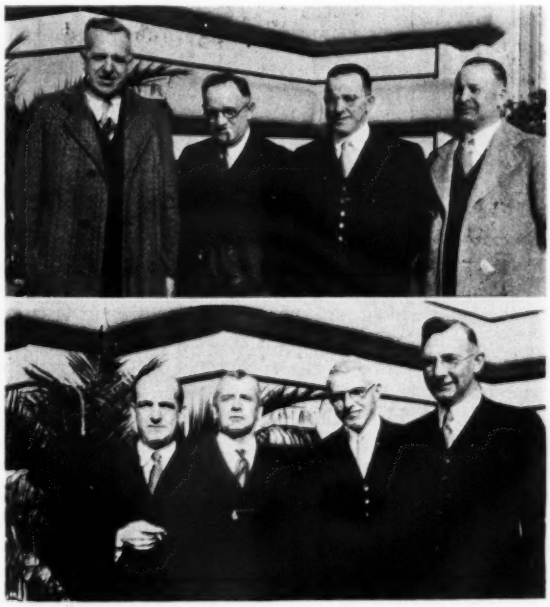
The Minnesota Master Plumbers' Association is planning to hold its annual convention on Tuesday, March 28, in the Curtis hotel at Minneapolis, Minn. This will be a one-day business meeting, followed by election of officers and a dinner in the evening for the master plumbers, their wives and friends.

Is Active in Carl John Stein Co.

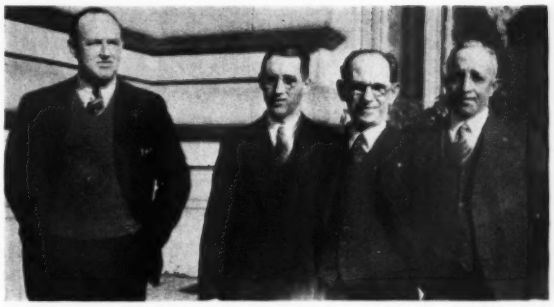
Announcement has just been made to the effect that Mrs. Carl John Stein is now actively connected with the plumbing and heating contracting business of the Carl John Stein Company at 166 East Grand avenue, Chicago, the business which was founded and for many years conducted successfully by her husband, Carl John Stein, who died a few years ago. Mr. Stein had the distinction of having installed plumbing and heating systems in many of Chicago's large office buildings, schools and factories, and he was also a past president of Chicago Master Plumbers' Association. Many of Mr. Stein's old employees are still connected with the company bearing his name.

The Friendship Club's Annual Dinner

The Friendship Club, consisting of men who have been connected with the plumbing and heating field in Philadelphia for more than 25 years, recently held its annual dinner at the Sylvania Hotel in that city. This year the dinner was given in honor of Harry L. Righter.



Top row, from left to right: L. J. Kruse of Berkeley and Wm. P. Goss of San Francisco, both past presidents of California State Master Plumbers Association; Wm. J. Monihan of San Francisco, former president of the local association, and R. W. Timmons of Richmond, vice president of California State M. P. A.—Bottom row, left to right: J. V. Young of San Francisco, past president of California State M. P. A.; P. E. Brand of Redwood City, J. B. Hawley of Sacramento, treasurer of California State M. P. A., and B. A. Newman of Fresno, past president of California State M. P. A.



J. D. Peabody and Wm. Peters, both of San Jose; Alexander Coleman of San Francisco, past secretary of N. A. M. P., and first president of Northern California Federation, and Wm. G. Koenig of San Francisco

After a silent tribute to the memory of departed members, Wm. McCoach, John A. Quinn and D. F. Durkin, the event got under way. Ross B. Davis of the Philadelphia Fire Department, and Mr. and Mrs. Wm. M. Anderson attended as special guests. Mr. Anderson was elected a member of the club.

Operation of Contractors' License Law Explained at California Conference

High lights of the two business sessions of the recent conference of California master plumbers were, first, a complete report of the workings of the State contractors' license law and, second, a helpful, practical talk on customer relations.

This was the seventh conference of the Northern California Federation of Plumbing and Heating Industries, and the second occasion on which the Master Plumbers' Association of San Francisco acted as hosts. The meeting took place during the afternoon and evening of February 4 at the Fairmont Hotel, San Francisco, and was attended by upward of one hundred and fifty master plumbers, wholesalers and manufacturers, and their families, from central and northern California. The organization consists of representatives from all three industrial branches, conferences generally being scheduled three times a year in various northern California cities.

As this was the first 1933 meeting, new officers and three new directors were chosen, as follows: Jas. F. Mauzy of Walnut Creek, president, succeeding Harry G. Newman of Oakland; J. V. Young of San Francisco, vice-president; and J. B. Hawley of Sacramento, treasurer. The three incoming directors are P. E. Brand of Redwood City, Robert Duncan, Jr., of Oakland, and Chas. A. Merritt of San Jose.

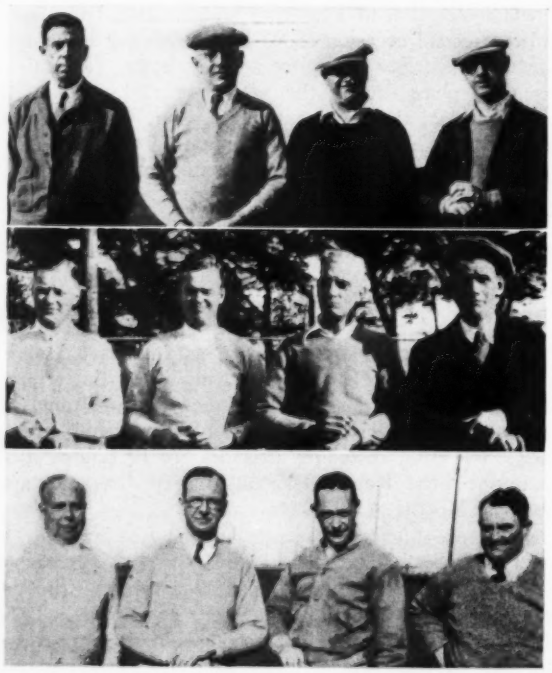
A feature of the afternoon session was an address on the subject of the license law by Glen V. Slater of Sacramento, assistant registrar of contractors, who detailed the benefits of the law since its enactment in 1929. It was shown that the chief accomplishment was to rid the state of hundreds of unscrupulous fly-by-night contractors who lacked ability and financial stability.

The benefits derived by the public and the construction industry, said Mr. Slater, through the operation of the licensing act, can hardly be measured by the amount of money involved in complaints brought before the

registrar which, so far, totals $614,000, as in most cases the complaints involve but a small unit of a major building project, involving many millions of dollars. In one such case it was shown that twelve houses were being financed on fictitious loans, on which as many owners were paying interest on funds not available in the first place, as no loans actually had been made. The firm was forced into bankruptcy, its officers jailed for embezzlement. In this case over $200,000 was involved, although complaint filed with the registrar was concerned with but a small part of the cost of one house. Enforcement of the act has also been instrumental in curtailing the operations of irresponsible contractors who make a practice of going from town to town, underbidding reputable contractors with the deliberate intention of skinning the job through cheap and inferior substitutions, diverting funds received for payment of labor and materials, then vanishing after receiving one or more payments.

50 PER CENT OF CONTRACTORS FAIL

Mr. Slater's report showed that up to September 30, 1932, a total of 39,235 individuals, corporations and others have engaged in contracting. Of this number, 19,987 have gone out of business, due both to economic conditions and the raising of qualifications and standards within the industry. At the same time, an average of 18,500 contractors have continued in business and remained in good standing during the licensing period. Last year, there were 25,050, of which 2,165 were plumbing contractors.



Top picture, left to right: Stuart Greenberg, J. J. McLeod, H. H. Hoopes and F. E. Lewis.—Middle picture: Frank Nickerson, A. Carrigan, Jr., G. F. Emanuels and R. P. Olsen.—Bottom picture: W. A. Taylor, B. F. Blair, F. F. Elliott and D. L. O'Hair. At the recent Holiday Jinx of the Plumbing and Heating Club of San Francisco

The license fee was originally set at $5, which was later found did not yield sufficient return to cover the cost of administering the law. In 1931, upon recommendations from within the industry, the Legislature increased the fee to $10, which resulted in a thorough administering of the law, provided for the purchase of essential office and field equipment and enabled the registrar to build up a substantial surplus. At present this surplus amounts to well over $100,000, and if it continues to mount may lead to reduced license fees. All monies collected by the registrar of contractors are handled by the State Treasurer as a special fund; at no time can they be used for any purpose other than carrying out the provisions of the act, nor do they find their way into the State's general fund.

Mr. Slater disclosed that during the last fiscal year field representatives made 72,000 calls on contractors or in the inspection of building projects; in the previous year 63,700 interviews and investigations were held; and in the first year, 24,128. During the three years this legislation has been in force, 1,442 complaints were filed with the Registrar, which does not include the hundreds of minor complaints made to inspectors in the field and satisfactorily settled by them on the scene. In the handling of these 1,442 cases, the licenses of 273 contractors were suspended, 39 others were revoked, and 232 others were ordered to cease operations until satisfactory settlements were effected with complainants. A total of 301 complaints were settled through the Registrar's office.

In carrying out the provisions of the Contractors' Act, Mr. Slater reported, a staff of 46 persons is necessary, 20 of whom are inspectors in the field. The monthly payroll amounts to $7,843.33.

PROTECTS REPUTABLE CONTRACTORS

In conclusion, the speaker pointed out that due to the vast development of the building industry in the five years preceding adoption of the license law, conditions were such as to require prompt and decisive action by the State, to the end that reputable contractors as well as the public should be protected. Not only is this being done; but the law also exerts a psychological effect that results in the promotion of higher standards within the industry. No contractor relishes the prospect of having his license revoked or suspended, nor the widespread publicity attendant upon such action.

A unique feature of the conference activities was the scene of the banquet which took place in the Terrace Plunge, the tables being set around the 75-foot tiled pool, with the speaker's table at one end. Coconut palms, colored lights and a Venetian orchestra in a gondola added beauty and charm to the occasion. President Charles Mayer of the San Francisco M. P. A. welcomed the guests.

A feature of the banquet entertainment was a swimming race and diving exhibition by high ranking amateurs, one of whom was Miss Doris McLeod, daughter of J. J. McLeod, San Francisco plumbing contractor.

Following the banquet, the ladies were entertained with cards and music in Laurel Court, the men adjourning to California Hall for the concluding session of the conference. This session was featured by an address by S. F. Worswick, author of "Romance of Selling," who talked on "Buyer and Seller Relations."

The keynote of Mr. Worswick's remarks was the responsibility of the employee to his boss. During the course of his address it was clearly shown, by a number of instances, how much depends upon the treatment accorded a customer, both actual and potential. "Unless they already know it—and not many seem to—bring your staff to the realization that they are fortunate in having a job," he continued. Turning to the subject of calamity-howlers, it was shown how vitally necessary it is to keep employees from wearing long faces and pouring tales of calamity into the customers' ears. Sales are easily frightened away, he said, but they soon warm up to the spirit of sound optimism. "We mustn't forget there are still some people with money to spend; but you certainly can't expect them to spend it in your place of business if your employees are sullen and grouchy, and then talk depression in the bargain." . . . "First, make your customers feel welcome—heartily so; then convince them they haven't spent the last bit of loose change in the world, by reflecting a brand of optimism that somehow rings true."

The concluding session adjourned at 10 o'clock, when dancing was enjoyed in the Terrace Ballroom until midnight.

The arrangements committee was headed by Alexander Coleman, assisted by J. V. Young, Victor J. Peterson, Roy Murray, Wm. G. Koenig and E. A. Balling; the ladies reception committee was composed of Mrs. L. Ravani, chairman, and Mrs. Wm. G. Koenig, Mrs. Charles Mayer, Mrs. E. A. Balling, Mrs. S. J. DiVecchio and Mrs. Roy Murray.

The next conference will take place at Marysville, the date and meeting headquarters to be announced later.

Montclair, Bloomfield and Verona Master Plumbers Hold Ladies' Night

The Master Plumbers' Association of Montclair, Bloomfield, Verona and Vicinity, Inc., recently held a ladies night at Chateau Louis, Cedar Grove, N. J. Dinner was served at seven o'clock, after which a short business session was held. Following this the rest of the evening was devoted to entertainment, games, dancing and other amusements. About forty members, their wives and some guests attended, making a party of about one hundred.

Everybody fortunate enough to be in attendance considered it an exceptionally enjoyable affair.

North Hudson Holds Successful Barn Dance

The North Hudson Master Plumbers' Association and Women's Auxiliary held a very successful barn dance recently at the County Park Hall at Bergenline avenue and Fortieth street, North Bergen, N. J.

Refreshments were plentiful, and dancing was the outstanding feature of the evening, many barn dance numbers being on the program. The hoosegow was a big attraction thanks to police protection from Wm. Jacob and C. Botwinik.

The prize winners of the evening were: Miss Wanda Meyer for the best original costume, Leo Beyer

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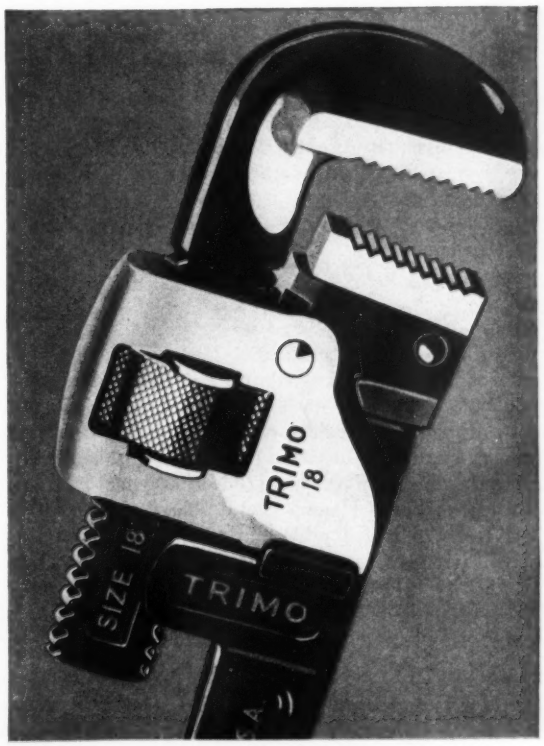

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Trimo is the outstanding long service tool. Its strength and wearing qualities are unduplicated in the pipe wrench field. Replaceable parts extend its term of usefulness far into the future.

ALL STEEL **TRIMO** PIPE WRENCH

Made by TRIMONT MFG. CO., Roxbury (Boston), Mass.

TRIMO

for the funniest costume, Mrs. Marie Rahne the women's door prize, Dan Thurnau the men's door prize.

Great credit for the fine success is due to the entertainment committee, which consisted of Dan Thurnau, chairman, and Mrs. Wm. Jacob, assistant chairman; Mrs. Wm. T. J. Orriss, president of the auxiliary; N. Triani, president of the association; Mr. and Mrs. C. Werner, Mr. and Mrs. F. Baker, Mr. and Mrs. H. Bunker, Jr., Mr. and Mrs. E. Wittruch, and Wm. Jacob and J. Kasper.

About 225 persons were in attendance, and all agreed that the affair was a most pleasant success.

Jersey City Master Plumbers Hold Annual Banquet

The Jersey City Master Plumbers' Association held its annual banquet recently at the Hotel Plaza, Jersey City, N. J., with an attendance of more than 150 members and guests.

Entertainment was presented by a vocal trio and an excellent orchestra. Dancing was enjoyed between courses during the dinner and afterwards until a late hour.

Edmund P. Ingram acted as toastmaster and introduced the following speakers: George Cooper, president of the association; Arthur Patterton, commissioner of public works in Jersey City; Mrs. H. Bunker, president of the Ladies Auxiliary of New Jersey; George H. Brenner, Orange Association of Master Plumbers; Nick Triani, president of North Hudson Master Plumbers' Association; James Hagan, health officer of Jersey City; E. J. Kelly, chief plumbing inspector of Jersey City; Jas. T. Brennan, secretary of the Master Plumbers' Association of Jersey City

The committee of arrangements consisted of the following: Louis S. Komoski, chairman; George Cooper, ex officio; E. P. Ingram, J. J. Corcoran, Richard Entwistle, Jas. T. Brennan, John T. Edge, John A. Ward, Wm. F. Bailey, James T. Conlin, Joseph Schneiderman, Harry P. Sharrock, Abraham M. Aranson, Louis C. Kull, Harry J. Wasserman, Jr., John J. Crosby, Joseph A. Reilly, Anthony A. Marzullo, Joseph A. Mulcahy, Jr., Wm. F. Mulholland and J. A. Freeman.

Local Associations Select Officers

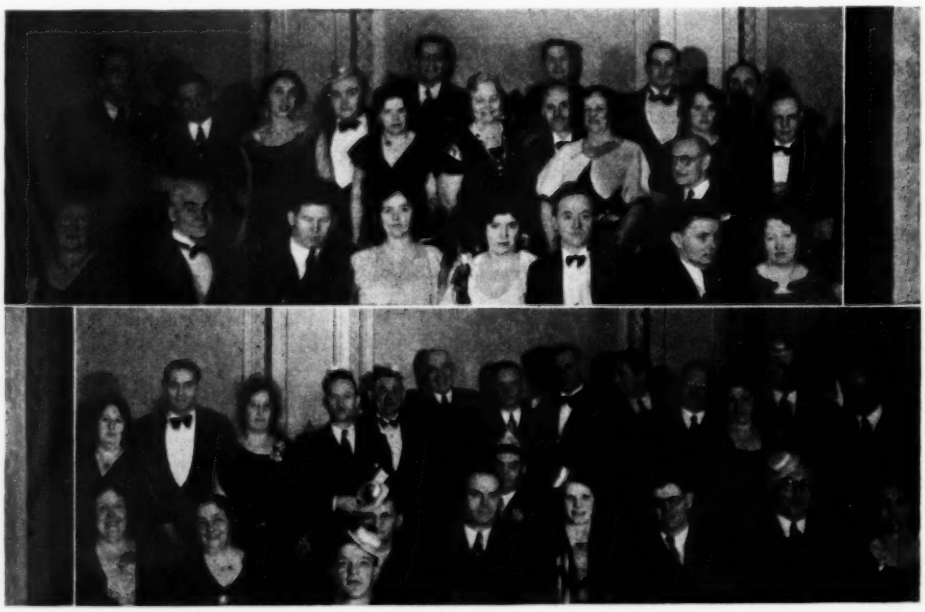
BOSTON, MASS.—The Master Plumbers' Association of Boston and vicinity: President, Edward H. Marchand; vice president, H. L. Rose, Jr.; secretary, Wm. J. McAuliffe, 334 Shawmut avenue, Boston; treasurer, Patrick A. Lang.

CLARENDON, VA.—The Plumbing and Heating Contractors' Association of Northern Virginia, Inc.: President, H. C. Messner, Clarendon; vice president, Robert Vranich, Alexandria; secretary, Paul C. King, Clarendon; treasurer, E. H. Birch, Cherrydale; sergeant-at-arms, Paul E. Scheffel, Arlington; board of directors: C. P. Nicholas, East Falls Church; William E. Wolff, Clarendon, and Charles E. Ladson, Arlington.

COLUMBUS, OHIO.—Master Plumbers' Association of Columbus: President, Elmer Siegle; vice president, Walter Spohn; secretary and treasurer, Wm. A. Schneider.

DAVENPORT, IOWA.—The Associated Plumbers of Davenport: President, Harry E. Speth; vice president, H. R. Wiese; secretary and treasurer, Roy P. Kerker, 2315 Ripley street.

ELIZABETH, N. J.—Master Plumbers, Steamfitters and Sheet Metal Workers Association of Elizabeth, N. J., and Vicinity: President, Joseph Arace, re-elected; vice president, H. A. Rath; secretary, J. W. Frank, 801 South street, Elizabeth, N. J.; treasurer, George L. Bird,



Some of the members and guests attending Jersey City Master Plumbers Association's recent annual banquet

re-elected; sergeant-at-arms, Nate A. Apgar; member of board of governors, 5-year term, James E. Daly.

HARRISBURG, PA.—The Harrisburg Association of Master Plumbers: President, Norman C. Stine, 45 East Lauther street, Carlisle, Pa.; vice president, Maxwell Fasick; secretary and treasurer, John H. Miller, 809 Capital street, Harrisburg.

HAVERHILL, MASS.—Haverhill Master Plumbers' Association: President, Wm. B. McAree; vice president, Henry Lebow; secretary, Wm. G. N. Tyrie; treasurer, Albert E. Dugdale.

JERSEY CITY, N. J.—The Master Plumbers' Association of Jersey City: President, George Cooper; vice president, James J. Conlin; secretary, James T. Brennan, 3 Foye place; treasurer, Louis S. Komoski; sergeant-at-arms, Anthony A. Marzullo; trustees: John J. Corcoran, Herman Firstenberg and Robert T. MacDonald.

LONG ISLAND CITY, N. Y.—The Master Plumbers' Association of Queens Borough: President, Jacob Stockinger, Jr.; vice president, Joseph Mittasch; secretary, Laurence J. Redmond; treasurer, John F. Rogers.

LOUISVILLE, KY.—The Louisville Master Plumbers' Association: President, Albert D. Burger; vice president, Martin Witmer; secretary-treasurer, O. H. Mitzlaff.

MARSHFIELD, WIS.—The Hydro-Thermal Club: President, Lewis J. Eron, Wisconsin Rapids, Wis.; vice president, Ben J. Hett, Wausau, Wis.; secretary and treasurer, Joseph J. Stadler, Marshfield, Wis.

MONTCLAIR, N. J.—The Master Plumbers' Association of Montclair, Bloomfield, Verona and Vicinity, Inc.: President, H. J. Williamson, Montclair; vice president, Henry J. Weingartner, Verona; secretary, Charles J. Samuel, Montclair; treasurer, Paul Zeim, Bloomfield; trustees: John Klimback, West Caldwell; Almond Kievit, Upper Montclair; Arthur Sherman, Glen Ridge. Outside guard, John Heyrich, Montclair.

PLAINFIELD, N. J.—The Master Plumbers' Association of Plainfield and Vicinity: President, John Morell, Scotch Plains; vice president, George Perry, Plainfield; recording secretary, A. F. Neumann, Plainfield; financial secretary, Ed. Simon, Plainfield; treasurer, George Kirch, Plainfield.

REDLANDS, CALIF.—Orange Belt Master Plumbers' Association: President, E. B. Brooks, Indio, Calif.; vice president, L. R. Pratt, Coachella, Calif.; secretary, H. J. Fisher, 10 East Citrus Avenue, Redlands; treasurer, E. J. Underwood, Redlands, Calif.

RICHMOND, VA.—The Master Plumbers and Heating Association of Richmond, Va., Inc.: President, W. G. Winter; vice president, Joseph C. Pettigrew; secretary-treasurer, J. Stuart Graham; sergeant-at-arms, T. A. Talley; trustees: E. G. Harris, Horace A. Carter and J. G. Boehling.

SALEM, MASS.—The North Shore Association of Master Plumbers: President, Maurice R. Sheehan, Salem; vice president, Thomas F. Kelliher, Marblehead; secretary, Jame H. Trow, Salem; treasurer, John F. Cabeen, Salem, Mass.

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annealed for 200 hours

YOU can be sure of true malleability of Kennedy Fittings because they are annealed for 200 hours—over 8 days—in pyrometer-controlled ovens. This long-continued process is so thorough that Kennedy Malleable Iron Fittings can be crushed almost flat without cracking. Your pipe fitters and machinists will find that Kennedy Fittings go on the pipe easily and make tight joints quickly, for they are strong and accurately machined, as well as being truly malleable.

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SAN DIEGO, CALIF.—San Diego Merchant Plumbers' Association: President, Edw. Rohde; vice president, C. F. Hoffman; secretary, A. C. Goeddel, 2304 El Cajon avenue, San Diego; treasurer, Cal Powers; auditor, H. J. Lambrechs.

UTICA, N. Y.—The Utica Association of Master Plumbers: President, John Schnitt; vice president, Charles Schauf; secretary, Edwin Wynne; treasurer, Henry Witte.

VIRGINIA, MINN.—The Range Master Plumbers' Association, Inc.: President, Walter Gracie, Bovey, Minn.; vice-president, William Gates, Grand Rapids, Minn.; secretary and treasurer, Wm. E. Heisel, Virginia, Minn.

WORCESTER, MASS.—The Master Plumbers' Association of Worcester: President, Ernest R. Holmes; vice president, William A. Burns; secretary, Harry L. Gustafson; treasurer, Carl F. Ostberg; financial secretary, David Young.

Newton, Mass., Association Installs New Officers

The Master Plumbers' Association of Newton and Vicinity, Inc., recently installed its officers for 1933, following a turkey dinner at Bond's Restaurant in Watertown, Mass. The affair was attended by members of the association and by members of the women's auxiliary. L. W. Stevens, the retiring president, installed the officers and was complimented on the able manner in which he conducted the ceremony.

The new officers are: President, Charles D. Kieser; vice president, John J. Burke; treasurer, John T. Ryan; secretary, L. J. Hickman.

Following his introduction into office, President Kieser in a short address told about what he intended to do during the coming year and asked the members and his fellow officers for their assistance and co-operation.

The balance of the evening was devoted to informal talks and entertainment by members, followed with indoor sports and contests with the award of several prizes.

Plumber Heads Washington Celebration

Joseph C. Netzer of Laredo, Tex., is a master plumber well known to many both within and without the industry because of his activity in association and civic affairs. Some of his friends recently received invitations to the annual Washington's Birthday fiesta to be given February 22 by citizens of Laredo and its neighbor, Nuevo Laredo, Mexico. Mr. Netzer is treasurer of the association in charge of the celebration as well as chairman of the decoration and international reception committees.

Maryland Master Plumbers Hold Annual Oyster Roast

The annual oyster roast of the Association of Master Plumbers of the State of Maryland, Inc., was held February 22, at Brendel's Manor Park, Maryland.

An ideal day brought out an attendance of nearly four hundred, including representatives of all the supply

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Myers Water Systems *Keep Faucets Flowing*

When you sell a MYERS WATER SYSTEM for home, farm or factory, water satisfaction starts to flow from the faucets the first day it is installed.

Time tested, fool proof features of outstanding merit. High class materials. Accurate workmanship. Low prices — all of them real talking points — talking points that score high in sales and profits for Myers Dealers.

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houses, as well as those of the manufacturers. Among those represented were: The Speakman Company, National Radiator Corp., U. S. Radiator Corp., The American Radiator Company, Crane Company, Sexauer Manufacturing Company, A. Weiskittel Company, and the Harry Weiskittel Company.

Delegations of master plumbers from Martinsburg, West Virginia, and also from Washington, D. C., headed by Chief Inspector A. R. McGonagle, were present. The National Association of Master Plumbers was represented by R. J. Barrett and Joseph G. Hildebrand, vice president and executive secretary, respectively.

Upon arrival at the park Maryland's famous oysters were ready in all styles, together with an abundance of beverages of all kinds. Throughout the day several radio entertainers furnished vocal selections as well as several specialty acts.

The committee headed by Gus Wirth, chairman, included Samuel Houck, Walter R. Schaeffer, Joseph L. Gessler, Rube Goldman, Jacob Goldman and Mrs. Dorothea F. Clark, executive secretary of the association.

Philadelphia Chapter, A. S. H. V. E., Elects Officers

The Philadelphia Chapter of the American Society of Heating and Ventilating Engineers held its annual meeting recently and elected the following officers for the ensuing year:

President, Merrill F. Blankin; vice president, Wm. P. Culbert; secretary, W. Roy Eichberg; treasurer, J. H. Hucker; board of governors: L. C. Davidson, W. F. Smith and A. McClintock, Jr.

St. Louis Chapter, A. S. H. V. E., Meets at David Rankin Trade School

The St. Louis Chapter of the American Society of Heating and Ventilating Engineers held its February meeting at the David Rankin Trade School in St. Louis, Mo., with ninety members and guests in attendance.

L. Walter Moon, newly elected member of the Society's council, reported on the annual meeting in Cincinnati.

The speaker of the evening was E. A. Jones of Milwaukee, who read a paper on "Domestic Air Conditioning," discussing the primary requirements for domestic air conditioning. The paper was accompanied by stereopticon slides, and it was favored with the undivided attention of those fortunate enough to be in attendance.

Michigan Chapter Hears Lecture on Summer Cooling

The Michigan Chapter of the American Society of Heating and Ventilating Engineers held its regular monthly meeting January 10. The Detroit Edison Company was host at this meeting.

Mr. McConachie called for nominations for representative and alternate on the nominating committee. Mr. Walker and Mr. Paetz were elected representative and alternate, respectively.

S. S. Sanford of the sales department of the Detroit Edison Company gave an illustrated lecture on "Summer Cooling," discussing the results and costs of several installations made last summer.

Capitol Faucets are the Best

COMBINATION SINK FAUCET

COMPRESSION LAVATORY FAUCET

COMBINATION LAUNDRY TRAY FAUCET

COMPRESSION BATH FAUCET

"Plumbing fixtures by Capitol Brass" is synonymous with the very finest obtainable in this type of equipment. Thoroughly up-to-the-minute in design, their workmanship is such as can be turned out only by skilled craftsmen with the most modern of plant equipment. Capitol faucets now have the finest washers ever made—practically indestructible.

Bohn Aluminum & Brass Corporation
CAPITOL BRASS DIVISION
MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS
DETROIT-MICHIGAN

Conventions . . . . . .

What State Associations Are Doing at Annual Meetings

Ohio Backs N.A.M.P. Price Policy Stand

"IT looks as if there is a rift in the clouds," said Edward B. Kleine, president of the National Association of Master Plumbers, in his address at the 42nd annual convention of the Ohio State Association of Master Plumbers, which was held February 7 and 8 at the Mayflower Hotel in Akron, Ohio, under the leadership of State President W. A. Schneider of Columbus.

Mr. Kleine was referring to the question of the sales policies of some manufacturers, and he was more optimistic than for some time past in regard to the outcome of the situation which has caused unrest in the industry.

Later on in the convention, the Ohio State Association unanimously endorsed the stand of the National officers on this question.

Mr. Kleine also called attention to the newly announced plan of another large manufacturer quoting revised price sheets of very recent date, in which there is 20 per cent mark-up on staple items and 25 per cent on items other than staples—both subject to the usual cash discount.

He stated that this new plan meets with the approval of the National officers, and he hoped that other manufacturers would work along similar lines.

Mr. Kleine also stated that the National Association is facing the most critical period of its entire history, and needs the support of every member, and master plumbers, not members, should join the association, because they are needed by the association, and they need the association.

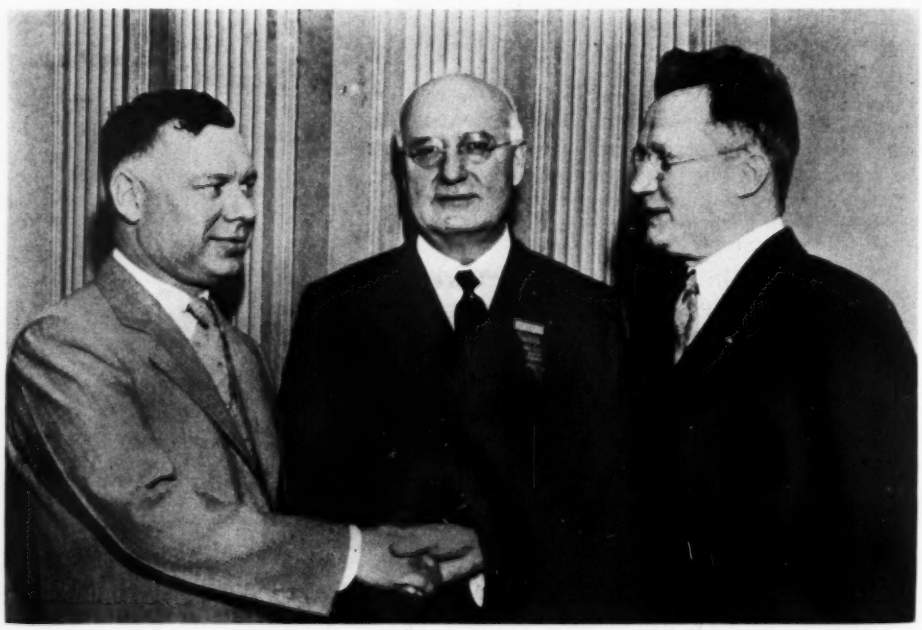
He touched on the question of the per capita tax, and said that a reduction, cannot be considered until the membership is materially increased, because the National Association is now working on a very much reduced budget — about $12,000 to $13,000 less than the previous year.

He referred to Resolution No. 29, adopted at last year's National convention, relative to the elimination of the wholesaler, and said that a special committee is studying this problem. He added that his personal opinion is this, "that, unless the manufacturer supplies the functions of the wholesaler, we must have the wholesaler."

He mentioned the appointment of Joseph G. Hildebrand as national executive secretary, and added that he considered it fortunate for the National Association to have obtained a man of his caliber for this position.

URGE DRIVE FOR REMODELLING

In conclusion he stated that the National officers have endeavored to give the members a businesslike administration, and it is now up to the members to go out and get new members, because the National Association needs the strength of numbers. Michigan, he added, has gained 200 new members in the last 60 days.



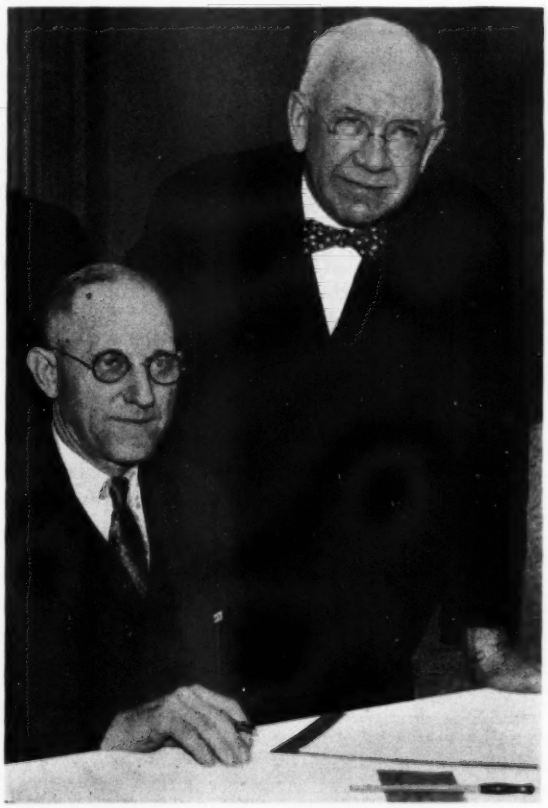
Walter Cahill, president of Akron Master Plumbers Association.—In the middle: W. A. Schneider, Columbus, retiring state president.—At the right: Edward B. Kleine, president of the National Association of Master Plumbers.—Photo by Akron Beacon-Journal

The following resolutions were adopted:

No. 1.—"The Sales Policies of the Manufacturer and the Jobber" is the subject which should probably be given greatest consideration at this time; however, the trade magazines have treated it so extensively in recent issues that this committee feels it has been brought fully to your attention.

Nevertheless, there is another condition which may be mentioned by us: "Owing to the existing shortage of new buildings, and of repair work being done by direct labor, we suggest that the contractor put forth a greater effort to bring the repair work back to the old established channel."

Each association should give this serious thought and adopt such methods as they think will be most beneficial to their particular needs to accomplish same.



Oliver Hoffman, Akron, president-elect of Ohio Master Plumbers' Association.—Standing: Edward Frank, Cincinnati, secretary of the National Association of Master Plumbers.—Photo by Akron Times-Press

One association sent letters direct to business and industrial companies, directing their attention to the benefit of their experience, responsibility and personal supervision, and that a saving can be shown when the matter of quality of work is considered; and another association has accomplished it through co-operation with journeymen by reducing wages charged for remodeling and repair work.

No. 2.—That the Ohio Association send a telegram to the Governor requesting that the appropriation for vocational training in the State budget be not cut any more in proportion than any other educational department.

No. 3.—That members get in touch with their representatives in Washington, D. C., and urge them to have the Department of Commerce retain the "Plumbing and Heating Industries Unit."

No. 4.—That the incoming board of directors make a study of the cost of industrial insurance with the idea of having compensation insurance rates reduced.

No. 5.—The proposed bill before the State Legislature pertaining to separation of bids on State work was referred to the incoming board of directors for further study.

No. 6.—Endorse the La Guardia Bill to amend the Federal Bankruptcy law, and so advise the two Ohio senators.

The personnel of the various convention committees follows:

Credentials: H. P. Bright, Akron; Charles Arting, Mansfield, and Henry Saunders, Dayton.

Resolutions: Wm. Fischer, Columbus; H. C. Baker, Toledo, and Harry Smith, Warren.

Memorial: Oliver Hoffman, Akron; U. G. Bott, Canton; H. L. Crockett, Springfield, and Dan MacDermid, Toledo.

Grievance: Chet Critchfield, Mansfield, and O. D. Hollar, Newark.

Press: John M. McGowan, Aylmer Thorpe and Walter Cahill, all of Akron.

Auditing: Walter Eynon, Canton; G. L. Gladieux, Toledo, and John Haas, Dayton.

HOFFMAN IS NEW PRESIDENT

Oliver Hoffman of Akron and Howard C. Baker of Toledo were elected president and vice president, respectively, while Eb Ellen of Cleveland, who has just completed 30 years as secretary-treasurer, was re-elected for another five-year term.

Toledo extended an invitation to the association to hold its next annual convention in that city and this invitation was accepted.

Delegates elected to attend the National Convention in New Orleans were: Walter Eynon of Canton and Ed Maurer of Cleveland. The alternates are W. A. Schneider of Columbus and Ab. Weinberg of Youngstown.

President-Elect Hoffman will be an ex-officio delegate. He and the other delegates were voted $100 each for expenses.

State President W. A. Schneider of Columbus called the convention to order and introduced Walter Cahill, president of the Master Plumbers' Association of Akron and Vicinity, who in turn called upon Vincent S. Stevens of the local Chamber of Commerce to deliver the address of welcome to the city.

Following this National President Edw. B. Kleine received a rousing welcome, when he was introduced. He spoke about cooperation and praised the women's auxiliaries for their work.

National Secretary Edward Frank was also greeted with enthusiasm by the convention.

American *Compression Faucets*

No. 800. Furnished Rough Brass, Finished or Nickel Plated. With Stuffing Box if Desired.

THE **American** Line of Compression and Quick Compression Sink Bibbs, is very complete, conservatively priced and designed so as to be in harmony with the average plumbing installation.

Ask your jobber for details and specify the **American** Line for remodeling jobs.

■

AMERICAN SANITARY MANUFACTURING CO.
ABINGDON, ILLINOIS

Among others introduced were Mrs. Oliver Hoffman, president of the Ohio Women's Auxiliary, and Mrs. C. L. Wall, president of the Akron Women's Auxiliary.

President Schneider responded to the various welcomes and thanked the speakers.

Eb Ellen was the first past president of the State Association to be introduced. The others were: Harry Smith of Warren, Chas. Wilson of Youngstown, Edward Frank of Cincinnati, Edw. B. Kleine of Cincinnati, Wm. Haas of Dayton, Arthur Reynolds of Columbus, Walter Kirn of Akron, Arthur Baum of Canton, Edw. Maurer of Cleveland, Wm. Grabowsky of Canton, H. W. Eckhardt of Cleveland, John Drese of Cleveland, and John J. Vogelpohl of Cincinnati.

PRESIDENT OPPOSES HIGH INSURANCE

President Schneider presented the report of his activities during the past year. He reported on general conditions in the state and on the various zone meetings that had been held. He also touched on the high cost of compensation and liability insurance and hoped it could be reduced.

Secretary Eb Ellen presented his report showing that on December 20, 279 had paid up, and that 104 had paid up to June 20.

Chas. Wilson's report as chairman of the publication committee was read by Harry Smith, and Eb Ellen also presented his report as editor of "Ohio Master Plumber." This showed a total advertising income for the year of $2,038.75 and an operating cost of $2,803.90, or a loss of $765.15.

Vice President Oliver Hoffman presented the report of the board of directors.

The essay committee presented essays by Dan MacDermid of Toledo and Walter Cahill of Akron.

Edward Frank of Cincinnati reported as delegate to last year's National Convention.

Walter Eynon presented the report of the apprenticeship committee, showing that lack of business had made inroads into the apprenticeship plan, as master plumbers found it difficult to employ apprentices under present conditions. However, the committee reported progress. Many cities in the State have apprenticeship classes, and these have a total enrollment of 211, and labor is looking more kindly on apprenticeship training.

FINDS PROFIT IS IGNORED

Walter Klie of Cleveland, a director of the Heating and Piping Contractors National Association, spoke on "Business Conditions Today." Referring to the depression, he said that many men are shutting their eyes to the need of obtaining overhead and profit. Touching on the problem of distribution, he said that this question has come to the fore in leaps and bounds, as some branches in the industry are wondering if they are using the proper methods. When all is settled, many will say: "Thank God for the National Association, which fought for our present method of distribution!"

Past National President John J. Vogelpohl delivered a forceful address on "Conditions in the Industry." He advocated distribution of materials through time-tested and old-established channels, in no uncertain tones. His sons, Robert Vogelpohl and Steve Vogelpohl, also spoke.

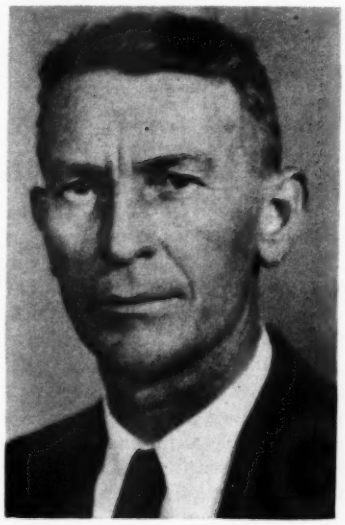
Tells West Virginia of New Policies

THE Master Plumbers' Association of West Virginia held its tenth annual convention in Huntington, February 13 and 14, with a representative number of delegates and guests in attendance. Among those guests were President Edward B. Kleine and Secretary Edward Frank of the National Association of Master Plumbers.

President Kleine, the principal speaker at the convention, was introduced by State President W. M. Johnson of Huntington. Beginning his address, Mr. Kleine emphasized the necessity of increasing the membership of the National, the State and the local master plumbers' associations, because the industry is facing the most critical period in its history and needs the support of every master plumber in the country.

He referred to the service departments of the Plumbing and Heating Industries Bureau, which were recently taken over by the National Association of Master Plumbers, and he called attention to the fine publicity work done by the Bureau in its new set-up. He urged the wholesalers to give the Bureau their financial backing.

"We are confronted on all sides with all sorts of policies of manufacturers and wholesalers," said Mr. Kleine as he entered upon a discussion of the distribution of



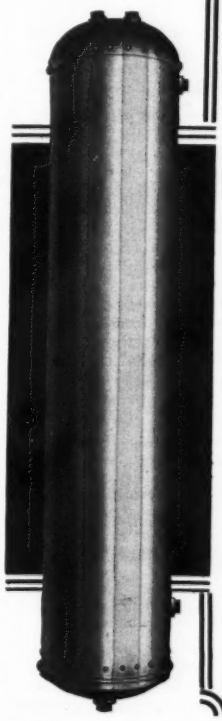
Geo. A. Thompson
President-Elect

materials. The various branches of the industry have different viewpoints, and each branch believes its own viewpoint is the right one.

Mr. Kleine stated that the officers of the National Association had at no time attempted to tell the manufacurer what price he should receive for his goods, but they had indicated that the master plumber should be allowed a reasonable discount on any article advertised for resale.

In passing, he said that at least one large company is in favor of an established resale price with a fair dis-

COPPER
FOR
SATISFACTION



In these days of

Hard Pan Selling

these NEW features stand out like a million dollars!

Old value standards have been revised. Thrift-conscious customers demand more for their money today. Dealers are meeting this condition successfully with this new

G & C DOMESTIC
Riveted Top and Bottom
COPPER RANGE BOILER

More sturdy strength . . . solid copper rivets top and bottom, heavily backed with solder. More convenient sediment trap at lowest point of bottom, insures clean water always. More advanced in design and construction. More sales—More PROFIT for YOU. What more could you ask?

Write for descriptive circular.

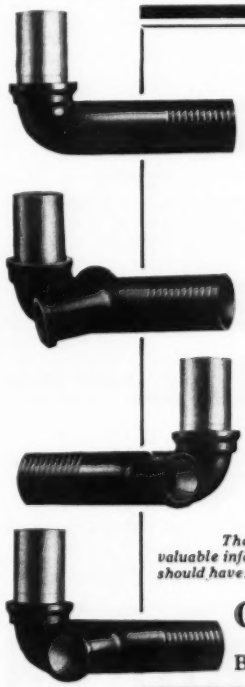
For every type installation
Specify G & C Boilers

Hotels, apartments, clubs, residences, public buildings. Inquiries invited.

GERSTEIN & COOPER
1-3 West Third Street
South Boston, Mass.

Gerstein & Cooper Co., Baltimore, Md.; G. Mason Price, Montreal, P. Q.; E. N. Cokefair, Inc., New York, N. Y.; Troop Water Heater Co., Pittsburgh, Pa.; Strong, Carlisle & Hammond Co., Cleveland, Ohio.

REDLON
WATER CLOSET FITTINGS



HERE are water closet fittings that will save you a great deal of time and trouble and yet give you a perfect lead connection.

They are easy to install and are made for either standard or extra heavy pipe. Consisting as they do, of a lead top THAT IS PART OF THE FITTING and a regular quality soil fitting, they will greatly increase the quality of your work.

There is further valuable information you should have. Write for it.

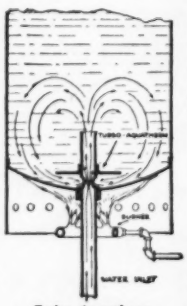
O. M. REDLON
COR. FRONT *and* FERRY STS.
BATH MAINE

Super-Aquatherm Gas Underfire

A DAHLQUIST Message!

Every hot water boiler in use today is a sediment trap! But, the reign of mud and stale water in range boilers, storage systems and automatic water heaters is over.

Theodore W. Dahlquist, President of the Dahlquist Mfg. Company, by changing the design of hot water boilers and installing his new invention, the TURBO-AQUATHERM upon which he has received both United States and Canadian Patents, eliminates the possibility of mud ever forming on the bottom of the boiler. A great advancement—by having the cold water enter through the TURBO unit in the bottom of the boiler (see diagram) causes a sweeping and scouring action, preventing the possibility of sediment ever forming in the boiler and eliminating stale water, burned out bottoms, coils and water fronts, resulting in a constant supply of clean, fresh hot water, never enjoyed before.



Turbo-Aquatherm
A new patented device which prevents mud from accumulating in the boiler.

The TURBO makes quick sales—Write for complete information.

Architects and heating engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers or heavy pressure boilers.

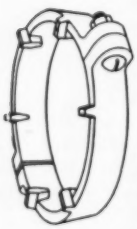
DAHLQUIST MFG. COMPANY
60 West 3d Street So. Boston, Mass.

Stop pipe thread leaks with SMOOTH-ON No. 1 in a

SMOOTH-ON CLAMP

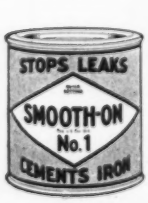
Sizes for 1-in. to 12-in. pipe

QUICK, easy, cheap and dependable. Holds for the life of the line—steam, hot or cold water, gas, etc., any pressure, any temperature, iron, brass, or copper pipe. No interference with bolt heads or nuts of flanged joints.



Smooth-On No. 1 stops leaks by making a pressure and fluid tight seal at joints, cracks, and breaks in metal. Use it on boilers, pipe lines, engines, pumps, compressors, tanks, etc., and to tighten stripped or loose bolts, studs and nuts.

Also excellent for resetting loose tool handles, hinges, locks, and for providing a solid backing between parts having irregular surfaces.



Applied cold and sets quickly, thereby avoiding long interruptions, hard labor and the expense for costly new parts.

Get Smooth-On Clamps and Smooth-On No. 1 from nearest supply house or from us.

Write for the Smooth-On Handbook

Smooth-On Mfg. Co., Dept. 26, Jersey City, N. J.

Do it with SMOOTH-ON

count to the plumber, and has announced such a policy. He added that the National Association is not in favor of the plan of wholesalers selling the public direct from their showrooms, even though they retain a discount for the plumber.

"It is your God-given right to buy your material where you please," said Mr. Kleine, "but do not take any other than individual action, which good business would dictate."

In concluding his address, he reiterated his former statement that it is impossible for the National Associ-

H. C. Hammann
Vice-President

ation to reduce the per capita tax and at the same time maintain its present activities.

National Secretary Edward Frank reviewed some of the activities of the National Association and its officers, and he announced that Michigan had added more than 200 names to its list of membership. He urged his hearers to start a membership drive in West Virginia, and he emphasized the importance of giving serious consideration to the caliber and the abilities of the men they would select as officers for the coming year, because the welfare of the association would depend a whole lot on the strength of its officers.

THE ELECTION OF OFFICERS

The officers elected by the West Virginia Association are: President, Geo. A. Thompson, Charleston; vice president, H. C. Hammann, Martinsburg; secretary-treasurer, C. V. Swann of Huntington (re-elected); directors: W. O. King of Clarksburg, George W. Redeker of Wheeling, J. H. Druen of Huntington, W. E. Smith of Parkersburg, C. H. Koontz of Mullens, and Arch. P. Fleming of Fairmount.

Charleston was selected as the convention city in 1934.

Charles Hagen of Huntington made a motion that the West Virginia Association endorse the actions of the National officers in regard to the sales policies, and motion was carried unanimously.

R. H. Holtzworth, president of the Huntington Association, called the convention to order, and Geo. W. Redeker of Wheeling responded.

Mr. Holtzworth then introduced State President W. M. Johnson of Huntington and turned the meeting over to him. President Johnson presented his annual report followed by the annual report of Vice President L. H. Caskey.

Secretary-Treasurer C. V. Swann's annual report was next on the program. He told of efforts made to increase the membership of the association, and he described his trips to the various associations in the state, and the meetings and the conferences he had attended.

He also reported on several joint meetings with wholesalers, which had been held for the purpose of bettering conditions. He added that he had sent out 6,000 pieces of mail in an effort to build up the organization.

The following visitors were introduced to the convention: A. R. McGonegal, chief plumbing inspector of Washington, D. C., and past president of the American Society of Sanitary Engineering; Percy Miller of Winchester, Va., president of the Virginia State Asso-

C. V. Swann
Secretary-Treasurer

ciation of Master Plumbers, and J. R. "Shorty" Lewis of DOMESTIC ENGINEERING.

J. J. Whitehead, Jr., sales manager of the Whitehead Metal Products Co. of New York, was given the courtesy of the floor and gave a short talk on the "Construction of Monel Metal Range Boilers."

The credential committee reported 36 delegates and 20 visitors in attendance.

The following resolutions were adopted.

1.—That state association dues be reduced from $15 to $10, per annum.

2.—That West Virginia Association endorses "Manufacturer to Wholesaler to Contractor" method of distribution and expresses the hope that the three branches co-operate.

Without any obligation on your part, we will send you a copy of this interesting book.

It explains how temperatures can be regulated mechanically, instead of wasting time of men to operate hand valves. It tells how to eliminate the danger of damage to costly materials by too much or too little heat. It explains how to save the cost of installing additional pipe lines to operate temperature controllers that require compressed air or water pressure for their operation. And it gives much other interesting information on the question of temperature control.

Many illustrations are shown of methods of installing temperature regulators, as well as tables that will be found useful. Various types of Sarco Temperature Regulators are shown for controlling the temperatures of hot water heaters, evaporators, retorts, stack or blast heaters, air ducts, preheaters, ovens, kilns, cold storage rooms, etc.

Write for this free booklet, M-70.

SARCO CO., INC.
183 Madison Ave., New York, N. Y.
Branches in Principal Cities
Sarco Canada Limited, Federal Bldg., Toronto, Ont., Canada

Obituaries—

Frank H. Dillenback

Frank H. Dillenback, a plumbing contractor in Black River, N. Y., since 1884, died recently at his home in that town, in his 72nd year.

Frank H. Wherry

Frank H. Wherry, heating contractor in Madison, Wis., died recently at his home in that city in his 74th year. He is survived by his widow.

Jack Hultquist

Jack Hultquist, who was formerly for many years engaged in the plumbing and heating business at Virginia, Minn., died at his home in Minneapolis, Minn., recently in his 55th year. He is survived by a daughter, his mother and a sister.

William Murphy

William Murphy, manager of the sales promotion department of the Boston office of Standard Sanitary Mfg. Co., died recently at his home in that city. Mr. Murphy had been connected with the plumbing industry 48 years, the last eight years with the Standard Sanitary Mfg. Co.

Benjamin E. Cardinal

Benjamin E. Cardinal, for many years engaged in the plumbing and heating business at St. Paul, Minn., died recently at his home in that city after a brief illness in his 58th year. He was very active in association affairs for a number of years. His widow, four sons and five daughters survive him.

Leo Brabenec

Leo Brabenec, of John Kleker Plumbing Company, 1707 W. 47th Street, Chicago, Ill., died recently at his home in that city. His death was caused by pneumonia. Mr. Brabenec was a member of the Plumbing Contractors' Association of Chicago. His widow and six children survive him.

M. P. Horner

M. P. Horner, a master plumber of Philadelphia, Pa., died recently at his home in Elkins Park in Philadelphia. Mr. Horner's plumbing establishment was for many years located at 8033 York road, and he had also for many years been a member of Philadelphia Master Plumbers' Association.

Patrick Meagher

Patrick Meagher, one of the oldest master plumbers in Syracuse, N. Y., died recently at the home of his sister in that city following a brief illness, in his 75th year. He was a native of Syracuse and had been in the plumbing business in that city since his early youth. A son and three sisters survive him.

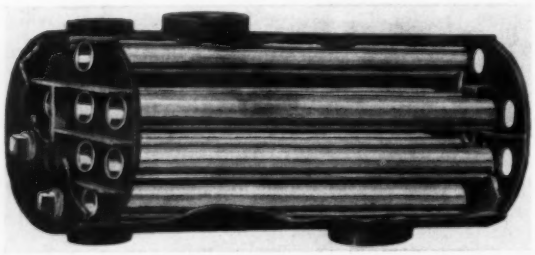
Edward J. Hanley

Edward J. Hanley, president of the C. O. Smith Plumbing Co. of St. Louis, Mo., died a few weeks ago at St. John's Hospital in that city of complications following an operation. He had been ill since October.

THE SHUR-HETE WATER HEATER

opens up a market for you where water conditions are bad.

OUR PRICES ARE RIGHT



ALL one-piece copper tubes are straight with plugs opposite each end of each tube so that all tubes can be cleaned easily.

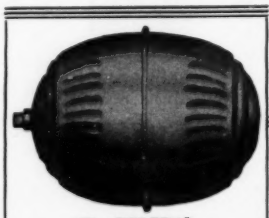
NO GASKETS OR BOLTS—HORIZONTAL TYPE ONE-PIECE CASTING — COPPER TUBES

For Spring, Summer and Winter Hot Water Supply. Saves Fuel. Cuts the Cost of Hot Water.

JOHANSON WATER HEATER CO., INC.
1239 FULLERTON AVENUE CHICAGO, ILLINOIS

REICHERT'S *are made for* HARD SERVICE

The Reichert Line: Leader Tank Balls ...Leader Floats... Federal Floats ... Toledo Solderless Floats



The **FEDERAL**

The **LEADER**

THE REICHERT Line is outstanding for one reason that should instantly appeal to every plumbing contractor, and that is *price*. And the low price in this case is not brought about at the sacrifice of quality. It is just the Reichert way of doing things. The Leader Tank Ball is now offered to you at a price heretofore unheard of. And that is what makes the cash register active these days. Ask your jobber.

***The* REICHERT FLOAT & MFG. CO.**
2238 SMEAD AVENUE, TOLEDO, OHIO

Mr. Hanley, who was born in Memphis, Tenn., came to St. Louis in his youth. He was a member of the St. Louis Master Plumbers' Association, and he served as chairman of the National educational committee during L. McNamara's two terms as president of the National Association of Master Plumbers. His widow, two daughters and a son survive him.

Joseph E. James

Joseph E. James, member of the plumbing firm of R. H. James Co. of Boston and Newtonville, Mass., died recently at his home in Brookline, Mass., in his 56th year. He had been ill for several months but had recovered to such an extent that he was able to resume his work when he suffered a relapse which caused his death. His widow and two daughters survive him.

Conrad Michalski

Conrad Michalski, a plumbing contractor in Forest Park, Ill., died recently at his home in that town. Mr. Michalski had been engaged in the plumbing business for twenty-five years, and he was formerly a member of the Plumbing Contractors Association of Chicago. He was also city auditor for Forest Park. He is survived by his widow.

William A. Pope

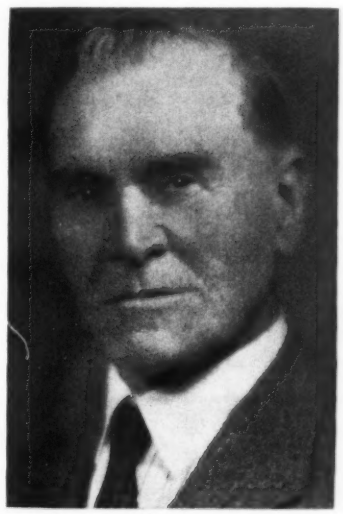
William A. Pope of Chicago, one of the leading heating and piping contractors of the country, died at Palm Springs, Calif., on Friday, February 17, in his 66th year. Mr. Pope was born in Chicago and had been engaged in the heating and piping contracting business under his own name for 35 years. He did the piping in the Commonwealth Edison power

William A. Pope

houses in Chicago and many other large installations both high pressure and otherwise, both in this country and in South America. He was a director of the Sloan Valve Co. of Chicago, and a member of the American Society of Heating and Ventilating Engineers, the Heating and Piping Contractors National Association, and of the Chicago Master Steamfitters Association. The funeral was held from his residence in River Forest, Ill., February 23. His wife, a son and a daughter survive him.

Past National President T. P. Culloton Called by Death

Thomas P. Culloton of Chicago, senior past president of the National Association of Master Plumbers, died at his home in that city on Saturday morning, February 18, after several months' illness. Mr. Culloton was born in Chicago, May 5, 1861, and received his education in its public schools. He learned the plumbing trade with Wm. F. Gay on North Clark street, Chicago, and worked with him until 1885, when he formed a partnership with



Thomas P. Culloton

his employer under the name of Gay & Culloton. This partnership lasted till Mr. Gay's death in 1906, when Mr. Culloton became sole owner, and continued the business at 63 West Austin avenue until his death. He joined the Master Plumbers' Association of Chicago in 1889 and became very active in increasing its membership as well as in the formation of the Illinois Master Plumbers' Association and those of adjoining states. He was president of the Chicago Association during 1893, the World's Fair year, and president of the National Association of Master Plumbers in 1897 to 1898. Since that time he has maintained a keen interest in the National Association's activities as well as those of the Chicago and the Illinois association. His widow survives him.

Wm. H. Zimmerman

Wm. H. Zimmerman, who has been engaged in the plumbing business in Lansdale, Pa., for the last twenty years, died recently at his home in that city. He was for many years an active member of the Philadelphia Master Plumbers' Association, and a large number of members of this organization attended his funeral.

MADE FOR LONG RUGGED SERVICE

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.

Tempered Steel

The Worcester line is complete.
Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

☆

PIPE FITTINGS

Clean threadways—Tapping to gauge—Absence of sand holes—all go to distinguish—IMICO—Fittings.

A full line in malleable iron, cast iron and brass.

Also manufacturers of brass and iron valves.

ILLINOIS MALLEABLE IRON CO.
Manufacturers of Brass and Iron Valves
CHICAGO ILLINOIS

Arthur Joseph Fish

Arthur Joseph Fish of the plumbing and heating firm of Fish & Bowen at Baker, Ore., died recently at his home in that city.

Charles W. Herold

Charles W. Herold, president of the Herold Plumbing and Heating Co. of Kansas City, Mo., died at his home in that city a few weeks ago, in his 55th year. Mr. Herold was born in Illinois but went to Kansas City about 35 years ago. During the war, he was employed by the government as a sanitary and heating engineer. His wife, two sons and a daughter survive him.

Fred Tanzer

Fred Tanzer, who had been engaged in the plumbing and heating business in Croghan, N. Y., nearly 40 years and until his retirement two years ago, died recently in the Lewis County General Hospital at Lowville, N. Y., of a complication of diseases. Mr. Tanzer was born in New Bremen, N. Y., January 1, 1862, and learned his trade in his father's plumbing shop in Croghan. He took over and continued the business after the death of his father.

Andrew C. Edgar

A. C. Edgar

Andrew C. Edgar, president of the Certified Heating Association of Philadelphia, Pa., died recently at his home in Newtown, Pa., in his 64th year. He was taken suddenly ill in the Gibson Hotel in Cincinnati, Ohio, while attending the 39th annual meeting of the American Society of Heating and Ventilating Engineers, of which he was a charter member and a life member. He was the only member who had attended every one of the Society's annual meetings. From 1894 to 1926 he was in charge of research work for the Abram Cox Stove Co. in Philadelphia as engineer, designer and manager of its boiler department. He was also at one time associated with the late Professor R. C. Carpenter of Cornell University in research work on burners as applied to gas water heaters. For twelve years he was engaged in the heating contracting business in Philadelphia.

Mr. Edgar was a past president of the Philadelphia Chapter of the A. S. H. V. E., and he served on the A. S. H. V. E. council in 1920. He was a director of the Philadelphia Heating and Piping Contractors Association and of the Hayes Mechanics Home. Four daughters and two sons survive him.

Otto Kosanke

Otto Kosanke, president of the South St. Paul Plumbing & Heating Co., St. Paul, Minn., died recently of a heart attack while visiting relatives at Forest Lake, Minn. He was in his 50th year.

New Trade Literature

Circular Announcing New Copper Range Boiler

Pennsylvania Range Boiler Company of Philadelphia, Pa., has issued a circular announcing a new line of non-collapsible, non-corrosive range boilers, made of everdur copper, which is described as having the strength of steel. All parts of these boilers are welded, and tapping designs and other fittings are interchangeable with steel.

Circular About Bibb Repair Kits

Jackman Tool Co., Inc., of Pittsburgh, Pa., has issued a circular illustrating and describing its bibb repair kit, containing screws and tools for making washer renewals an easy job. Among the tools are two extractors, three drill guides and two drills. The tools and screws are in a sturdy lithographed metal box with special compartments.

Circular About Portable Air Conditioner

H. M. Sheer Co. of Quincy, Ill., has issued a circular which illustrates and describes in detail its portable air conditioner. This device is designed to balance up the dry raw air in a room with a sufficient amount of water to make the dry air healthful. It is also designed to atomize, circulate and wash the air in an average room 2½ times an hour.

Circular on Electric Weld Pipe and Casing

Republic Steel Corporation of Youngstown, Ohio, has issued a circular featuring its electric weld pipe and casing. This pipe is available in lengths up to 50 ft., is clean inside and outside—no scale, no roll marks, no liquor marks, no burrs, and every length is inspected in the flat to insure against possible inside defects. Tables of weights and dimensions are included. This circular is designated No. 217-B.

Blake Specialty Co.'s New Catalog

Blake Specialty Co. of Rock Island, Ill., has issued its catalog, No. 90, covering its line of wall hung closet fittings. This catalog consists of 54 pages, 9x11 in., and it is copiously illustrated with typical installations showing "roughing in" of these fittings. The last fifteen pages in the catalog are devoted to halftone reproductions of photographs of many skyscrapers and other large buildings in which Blake Specialty Co.'s products have been used.

Catalog of Goulds Pumps, Inc.

Goulds Pumps, Inc., of Seneca Falls, N. Y., has issued its 1933 catalog, consisting of 128 pages and containing well over 200 illustrations. The book is divided into four sections: I, Shallow and Deep Well Water Systems.—II, Hand Pumps.—III, Accessories.—IV, Industrial Pumps. Several new pumps are shown as well as a new portable electric cellar drainer. A large line of new and improved cylinders for shallow and deep well pumps will be found in the accessory section.

Booklet on Weld Testing Machines

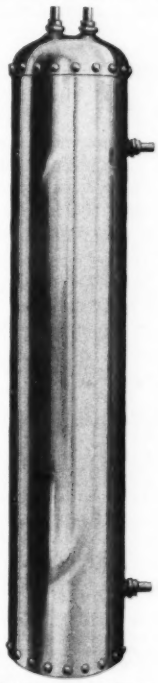
The Linde Air Products Company of New York City has published a 15-page, illustrated booklet, 6x9 in., under the title of "The Oxweld Portable Tensile Testing Machine." This machine is described as meeting the constantly increasing need for a practical, efficient method of testing welds. Details of construction and complete directions for operating are contained in this booklet. There are also explanations of the proper methods of preparing coupons for testing and of calculating the tensile strength.

Circular Announcing New Line of Stoker

The Patterson Foundry & Machine Company of East Liverpool, Ohio, has issued a four-page circular, 8½x11 in. in size, announcing a new line of automatic stokers in intermediate sizes for moderate capacities yet operating with all

Riverside Products

Below Are Some of the Popular Lines



1. Copper Range Boilers
2. Galvanized Range Boilers
3. "Asphaltized" Septic Tanks
4. All Copper "Packo" Storage System (Side-Arm Type)—also made in galvanized "Kopsteel"
5. "Kopsteel" Riboco Storage System (Underfired Type)—also made in Copper

All built by a manufacturer with 44 years of experience. It will pay you to "Stick to Riverside for Quality and Profits"

For prices see your favorite wholesaler for attractive "Sales-Pulling" circulars with your imprint—write us.

RIVERSIDE BOILER WORKS, INC.
CAMBRIDGE *Since 1889* MASSACHUSETTS

FINE TEETH START THE CUT
SELF-STARTING
REGULAR TEETH COMPLETE THE CUT

THESE SEVEN OUTSTANDING FEATURES

mean greater value at no extra cost!

1. Starts cut at any angle.
2. Teeth will not catch in corners.
3. Starts quickly with a full cutting stroke.
4. Reduces cutting time.
5. No scraping to begin cut.
6. Will not slip off cutting line.
7. Distributes wear full length of blade.

Use the Milflex Duplex Blade for cutting copper and brass tubing pipe, etc. It's the most practical blade designed for the heating and plumbing trade.

MILFLEX DUPLEX PATENTED U.S.A.
HACK SAW BLADES

ORDER FROM YOUR JOBBER
HENRY G. THOMPSON & SON CO.
NEW HAVEN, CONN.

DEPEND ON ACHESON'S

BE sure the Brass Fittings you use are marked with the trade-mark "M" on the inside. Then you know you are using fittings that can be depended upon to give the kind of service your customers have a right to demand.

ACHESON MFG. CO., RANKIN, PENNA.
NEW YORK WAREHOUSE — 197 LAFAYETTE ST.

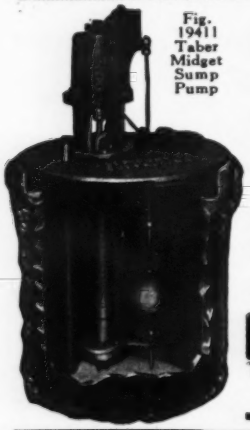


Fig. 1941 Taber Midget Sump Pump

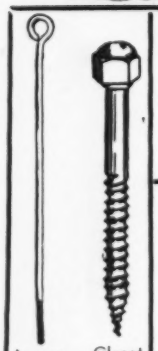
It works . . . . . . when needed most

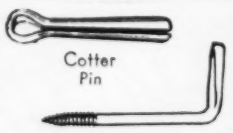
After heavy rain-storms there is an increased demand for Taber automatic Midget Sump Pumps. Frequently they replace "low price" cellar drainers inadequately motored.

Why wait for a peak load to tell whether the pump will work? Avoid troublesome, profitless service calls . . . install Taber first. The owner of any sump pump expects "Dry Cellar Insurance." He gets it with a Taber Midget.

Bulletin and prices on request. Also see Page 632 Domestic Engineering Catalog

TABER
TABER PUMP CO. *Est 1859*
290 Elm Street, Buffalo, New York





PLUMBERS' SPECIALTIES
Write for information on the complete line of Hindley's Specialties. They will save your time and money.
HINDLEY MFG. CO.
VALLEY FALLS, R. I.

MOORE RELIEF VALVES

PRESSURE—TEMPERATURE VALVE

MEAN MORE SAFETY

Fuse carrier holding extra fuse plug. Replacement made without removing valve or disturbing pressure seat.

J. W. MOORE VALVE CORPORATION
EVERETT MASSACHUSETTS

the efficiency and the convenience of the heavy-duty industrial models. This line of stokers is of the underfed type, designed to fit the needs of medium size buildings such as small apartments, churches and schools as well as offices, garages, show-rooms, waiting stations, stores, shops, etc. There is no complicated mechanism in these stokers, and they have a minimum of moving parts.

Circular on Air Filters

Davies Air Filter Company of New York City is distributing a circular describing and illustrating some of its air filters and silencers, which are designed to ventilate rooms with filtered air and shut out noise. A special device automatically regulates the inflow of pure air and varies it from 50 cubic feet to 350 cubic feet of air per minute, as desired. Only one unit is required for each room, and it supplies enough air for ten persons.

Bulletin on Combustion Control Systems

L. J. Wing Mfg. Co. of New York City has issued a bulletin, entitled "Better Heating," describing and illustrating its combustion control systems, turbine blowers, fog eliminators, unit heaters, unit coolers, exhausters, turbines and fans. The bulletin also brings reproductions of photographs of many buildings in which this company's products have been installed, including colleges, hospitals, hotels, stores, banks, churches, factories, office buildings, apartment houses, etc.

"Piping Tailored to Fit"

Air Reduction Sales Co. of New York City has issued a 26-page booklet, "Piping Tailored to Fit," which describes the rapid progress made in oxy-acetylene welding of pipe in heating installations. The booklet is well illustrated with photographs of typical installations and drawings showing the proper methods of design set-up for welding pipe connections, and it contains in concise form a comprehensive outline of up-to-date welding practice. Of special interest are two drawings illustrating a threaded pipe heating installation and a welded pipe installation with lists of the material used on each job.

Manual of Ratings and Data for Weather Control Units

The Motor Wheel Corporation of Lansing, Mich., has issued "A Manual of Ratings, Specifications and Data for Weather Control Units." This manual is divided into following sections: 1. General Description of Unit Design and Construction, Automatic Humidification. 2. Characteristics: Noiselessness, Finish, Simplicity. 3. Guarantees Against Deterioration. 4. Detailed Specifications, Ratings and Technical Information. 5. Blower Specifications and Data. 6. Guaranteed Performance Data. 7. How to Figure a Forced Air Heating System and Arrive at the Weather Control Unit and Blower of the Proper Capacity for a Given Job. Several tables and a chart are included in the manual.

A Booklet and Two Circulars About Oil Burners

Wayne Oil Burner Corporation of Fort Wayne, Ind., has recently issued a booklet, "The New Freedom from Heating Worries," and two circulars, "The Glow of Health" and "A Wayne Plus Any Good Boiler." The booklet, "A New Freedom," is divided into the following chapters: "Think of a Whole Winter Without Coal Heaving, Without Ashes!" "Your Basement Free from Dirt at Last;" "Burning Low Cost Fuel Oil;" "Uniform Heating, Noiseless;" "Freedom from Waste;" "Easy to Install—With Diagram Showing the Cycle of Oil in This Company's Oil Burner System;" "Home Owners, Who Have Found the New Freedom from Heating Worries;" "Eliminate Dirt at the Source;" "Modernize Your Basement;" "Take Advantage of the New Freedom the Oil Burner Offers You," and "The Name Behind the Product." The two circulars describe and illustrate the company's oil burners and tell how they can be hooked up with any good boiler.

Catalog of Pressure and Vacuum Gauges

The Federal Gauge Company Division of the Mercoid Corporation of New York City has issued a catalog of its gauges for all pressure mediums including steam, water, air, oil, gas and ammonia, designed to give accurate and durable service. Among the gauges to which most space has been devoted are: Steel case, single spring gauges of the altitude, hot water and tank-in-basement types for hot water heating systems; special combination gauges for hot water heating boilers; ounce graduation pressure and compound retard gauges for vapor and vacuum heating systems, and hydraulic gauges. Special attention is also given to the company's test gauges and gauge accessories. The catalog is bound in an attractive cover in four colors: Gold, blue, black and red.

Two Bulletins on Sewage Pumps and Water Supply Pumps

Economy Pumping Machinery Co. of Chicago, Ill., has issued two bulletins, one featuring its line of non-clogging submerged sewage pumps, and the other devoted to its two-stage opposed impeller centrifugal pumps for water supply in high buildings, small municipalities, industrial and process plants, golf course sprinkling, etc. The bulletin on sewage pumps not only describes improvements in the design and construction of these pumps, but it also gives engineering data necessary for the calculation of sewage pump capacities as well as data for the determination of sump and basic dimensions. The bulletin on water supply pumps describes these pumps as being of the ball-bearing, horizontal split-case design, suitable for drive by electric motors, gasoline engines or steam turbines. They are characterized by thick stubby shafts, which are very rigid and insure smooth, quiet operation. A 300-gallon per minute pump operating against 150 pounds pressure has a shaft length of only 27 inches. The compact construction of these pumps saves floor space and weight. Dimension and head capacity tables are included.

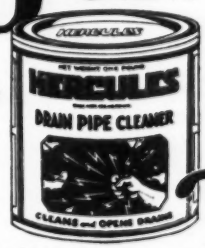
Catalogs of Vapor and Vacuum Heating Specialties, and of Water Feeders

The McAlear Mfg. Co. of Chicago has issued two new catalogs, one illustrating and describing its vapor and vacuum heating specialties, and the other its water feeders. Among the many heating specialties featured in the former catalog are: Radiator valves and traps, automatic air valves, air eliminator and return traps, ball float steam traps, high pressure thermostatic steam traps, low pressure steam or water traps, damper regulators and gauges, and pressure reducing regulators. A large amount of engineering data is also given in this catalog. The other catalog on "Water Feeders and Controllers" features simplex and duplex water feeders, combination water feeders and controllers, liquid level controllers, feed water regulators, and combination low water and pressure switches. The value of both catalogs is enhanced by the addition of blue prints of proper methods of installations and connections.

"Guide to Rubber Goods"

Designed to provide a wealth of information on rubber goods for industrial uses in convenient form, The Diamond Rubber Company, Inc., of Akron, Ohio, has just issued its new "Guide to Mechanical Rubber Goods," consisting of 24 pages, full of illustrations and data, easy to read and understand, on many of the most widely used mechanical rubber products. "Facts about Hose" discusses construction, working and test pressures and includes a comprehensive table on "Loss in Pounds Pressure per 100 Feet of Hose." All-rubber tubing, rubber packing, pump valves, rubber cements, sponge rubber and a wide variety of other rubber products are described and pictured.

16 HERCULES
DRAIN PIPE CLEANER
16 oz. NET WEIGHT



• SOLD ONLY BY THE PLUMBING TRADE •

NOW RETAILS FOR 25¢

Cold Water or Fumeless
STANDARD HERCULES QUALITY
Unconditionally Guaranteed

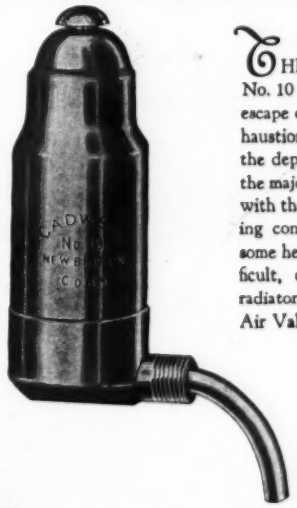
A PRICE CUT
That Increases Your Profits

Plumbers everywhere are stocking HERCULES DRAIN PIPE CLEANER. Never before has there been an opportunity like this to kill off catalog, chain, grocery and drug store competition by offering a 16-oz. Drain Pipe Cleaner of nation-wide reputation to sell for 25 cents. Brings more sales . . . with a protected profit of 50% on every can sold. Ask your jobber to send you

HERCULES DRAIN PIPE CLEANER at these prices:
16 oz. (1 lb. net wt.) size.....$2.00 Doz.
2 lb. net wt. size.....$3.90 Doz.

HERCULES CHEMICAL CO., INC. 332 CANAL ST., NEW YORK

CADWELL
NO. 10 AIR VALVES



THE quick action of CADWELL No. 10 Air Valves in preventing the escape of steam and allowing the exhaustion of air from the radiator and the dependability of this action, are the major reasons for their popularity with the most discriminating of heating contractors. If you are finding some heating system particularly difficult, due to the non-heating of radiators, try CADWELL No. 10 Air Valves.

Get them from Your Jobber

The BEATON & CADWELL MFG. CO.
Established 1894
NEW BRITAIN, CONN.

New Contractors and Incorporations

San Francisco, Calif.—Oscar Aaron has opened a plumbing and heating business at 243 Sixth street.

Sumas, Wash.—The Sumas Plumbing and Electric Co. has started in business under the management of E. A. Thomas.

Los Angeles, Calif.—Frank D. Mitchell and Fritz Edmonson have opened the LaFayette Hardware, Plumbing and Electrical Shop at 2712½ West Seventh street.

Seattle, Wash.—The Green-Mead Co., Inc., has been incorporated with a capital of $10,000, to conduct a heating business. The incorporators are Frank L. Green and Wendell P. Mead.

Brooklyn, N. Y.—Sam Rudinsky, Inc., has been incorporated with a capital of $4,000 to conduct a plumbing contracting business. Byrne & Byrne of 26 Court street represent the new concern.

Southgate, Calif.—Fred Held & Son is the name of a new plumbing firm which has purchased the plumbing and heating contracting business formerly conducted by the late A. Geddes Parrott at 3308 Post street.

New York, N. Y.—With a capital of $10,000, M. Bash and associates have organized and incorporated the M. Bash Plumbing and Heating Corporation, to establish and operate a plumbing and heating engineering and contracting business. The new firm is represented by the Attorneys Service Company, 299 Broadway.

New York, N. Y.—The firm of J. Rezek, Inc., has been chartered, with a capital of 100 shares no par common stock, to establish and operate a heating engineering and contracting business in Queens. Siegel & Siegel, 51 Chambers street, represent the new concern.

Brooklyn, N. Y.—With a capital of $5,000, Heating Efficiencies, Inc., has been organized, to establish and operate a general plumbing and heating engineering and contracting business. The law firm of Cutler and Cutler, 50 Court street, represents the new company.

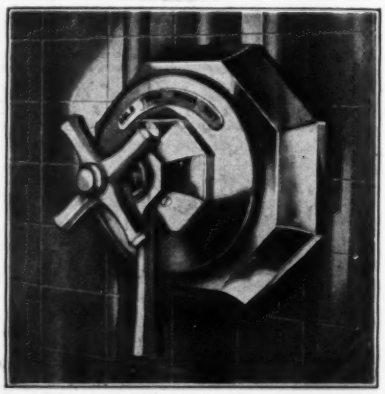
Atlantic City, N. J.—The Crane Hardware and Plumbing Company, Inc., has been organized, with a capital of 300 shares no par common stock, to establish and operate a plumbing engineering and contracting business. The local law firm of Bourgeois & Columb represents the new concern.

New York, N. Y.—Capitalized at $10,000, the I. Fuchs Plumbing Company has been organized and incorporated, by Irving Fuchs and associates, to establish and operate a plumbing engineering and contracting business. M. Bader, 70 Pine street, represents the new firm.

Hackensack, N. J.—The Al McGrath Company has been organized and incorporated, with a capital of $10,000, to establish and operate a plumbing and heating engineering and contracting business. Samuel Denson, local attorney, represents the new company.

Brooklyn, N. Y.—Joseph Umanskey, Inc., has been chartered, by J. Umanskey and associates, with a capital of $5,000, to engage in the plumbing engineering and contracting business. J. I. Rudavsky, 1773 Pitkin Avenue, represents the new concern.

St. Paul, Minn.—The Katz-Mogelson Plumbing & Heating Co., Inc., has been incorporated with a capital of $50,000, to conduct a plumbing and heating business. The incorporators are Harry Katz, 1053 Fairmont avenue, St. Paul, and Isadore Mogelson and Abraham Mogelson.



LEONARD

Water Mixing Valves

Leonard Control is positive, unfailing control. The Leonard Valve enables the shower to be started at tepid, warm or hot, and also permits the regulating of the flow of blended water, maintaining constantly, the temperature required. And, the Leonard shuts off automatically should the hot or cold water supply fail.

Let us tell you more about it.
We will gladly send you literature.

LEONARD-ROOKE CO.
Incorporated 1913
PROVIDENCE RHODE ISLAND

Now **COPPER**
as strong as Steel!

Rust-resisting, non-collapsible COPPER Range Boilers made of Everdur Copper, with the ruggedness of steel. They cost no more than ordinary copper. All parts are welded, not soldered. Tapping designs and other fittings are interchangeable with steel. Golden finish, highly polished, lacquered and individually crated.

JOBBERS: Write us for sample of any boiler for 30-day inspection.

Pennsylvania Range Boiler Co.
Established 1895
24th & Washington Ave., Phila., Pa.

Manufacturers of a complete line of
ALL WELDED and RIVETED AND WELDED GALVANIZED RANGE BOILERS

Sold Thru Jobbers

PENNSYLVANIA
EVERDUR COPPER
RANGE BOILERS

Women's Activities

"There is not a place in heaven or earth,
There is not a life, there's not a birth,
That has a feather's weight of worth
Without a woman in it."

By DOROTHY EDWARDS

Ohio Women's Auxiliary Holds Fourteenth Annual Convention

The fourteenth annual convention of the Women's Auxiliary of the Ohio Master Plumbers' Association was held at the Mayflower Hotel, Akron, Ohio, Tuesday, Feb. 7.

Mrs. C. Wall, local president, introduced State President Mrs. Oliver Hoffman.

The invocation was pronounced by Mrs. Wm. Fischer of Columbus.

Reports of committees and delegates were made and all regular business transacted.

The Akron Auxiliary presented beautiful gifts to Mrs. Oliver Hoffman, Mrs. Howard Baker and Mrs. Baum.

Past Presidents of the State Auxiliary in attendance were introduced. They were: Mrs. Chas. W. Wilson, Youngstown; Mrs. Wm. Haas, Dayton, and Mrs. H. L. Crockett, Springfield.

The following officers were elected: President, Mrs. A. Murphy, Cincinnati; vice president, Mrs. Howard C. Baker, Toledo; secretary, Mrs. Edw. B. Kleine, Cincinnati; treasurer, Mrs. Ed. Maurer, Cleveland.

Members of the Auxiliary were entertained on Tuesday by a trip to the Airport and by attending a performance at Loew's Theater. On Wednesday they were given a special breakfast party followed by a card party. In the evening they attended the dinner-dance of the State Association.

West Virginia Women's Auxiliary Holds Annual Convention

The West Virginia Women's Auxiliary held a two day convention at Huntington on February 7 and 8.

The convention was called to order by Mrs. Chas. Hagan, president of the Huntington Auxiliary.

The invocation was pronounced by Mrs. Geo. N. Biggs, and an address of welcome was made by Mrs. Jack Uhl of Huntington Women's Club.

The state president, Mrs. J. Guy Hawkins of Fairmont, was introduced.

The ladies were addressed by President E. B. Kleine and Secretary Edward Frank of the National Association of Master Plumbers and by A. R. McGonegal, past president of the American Society of Sanitary Engineering.

The following officers were elected: President, Mrs. J. Guy Hawkins, Fairmont; vice president, Mrs. Arch P. Fleming, Fairmont, and secretary-treasurer, Mrs. L. H. Caskey, Martinsburg.

Members of the local auxiliary entertained their guests in fine style. On Monday a luncheon was given at the Frederick Hotel and a buffet supper at the home of Mrs. Chas. H. Hagan, followed by a theater party at the Keith-Albee Theater.

On Tuesday they made an auto tour of the city and in the evening attended the banquet and dance of the West Virginia Master Plumbers' Association.

Philadelphia Auxiliary Re-elects Its Officers

The Philadelphia, Pa., Women's Auxiliary met recently with 28 members in attendance. The electfon of officers was held, at which time it was decided to retain present incumbents for the coming year. Mrs. J. F. Seibel reported that 47 baskets were distributed to mechanics and laborers working for the plumbing trade. Following the business meeting, two hours were spent in making children's garments for the Red Cross. This work has been taken up this winter and already 72 garments have been made. Entertainment and refreshments were omitted at this meeting, as members of the auxiliary were invited to join the men in a buffet luncheon.

On February 2 the auxiliary held its monthly meeting at 1938 Market Street. Twenty-five were in attendance and sewed for the Red Cross and played cards. Sandwiches, cake and coffee were served and candy was placed on each table. The committee consisted of Mrs. Maney J. Feeney, Mrs. Diggens and Mrs. Dempsey.

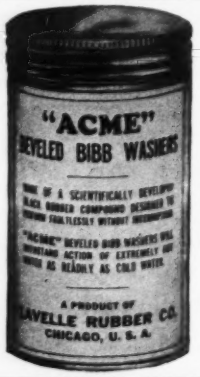
A Valentine party was held on February 4 at Tioga Business Men's Hall. Refreshments were served and many games enjoyed. The committee in charge consisted of Mrs. G. Hicks, Mrs. P. Freeman, Mrs. W. H. Beahm, Mrs. H. Stilwell, Mrs. J. Soehle and Mrs. F. Stratton.

Meetings are held on the first Thursday of the month at 1938 Market street, and, to use the words of Mrs. Clara G. Beahm, "The latch string is always out on our meeting night for every member of other auxiliaries who may be in the city."

Germantown Auxiliary Enjoys Dinner at Kupke's

The Germantown, Pa., Women's Auxiliary recently held a dinner at Kupke's with twelve members present. The regular meeting took place following the dinner and then cards were enjoyed. The auxiliary re-nominated the same officers for the coming year.

Group of women attending the annual convention of the Michigan State Auxiliary, which was held at Mount Clemens, Mich.



TO protect your customers from constant washer trouble, be sure you carry the genuine ACME Bibb Washers. To protect you from imitations the name ACME is etched on every washer. ACME'S come in seven sizes, packed 100 to the can, or in the HANDIPAK, a container holding 100 assorted washers in seven different sizes.

Order ACME'S from your jobber.

Lavelle Rubber Co.
320 W. Illinois Street
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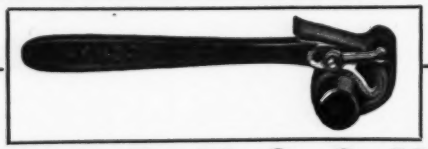


• WARNOCK •
Triple Wear Wrenches

The Warnock wrench is easyto adjust. The strap is arranged in such a way that it can be drawn absolutely tight in *one* movement. Notice, too, that this strap is triple folded at the point of greatest strain.

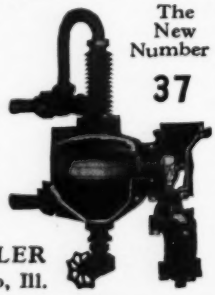
For chrome, brass and nickle plated pipe

WARNOCK MFG. CO., Worcester, Mass.

Install a PROVED Feeder!

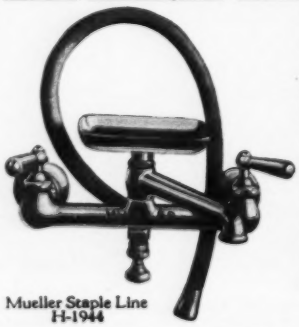
—the only feeder with the cool, scale-free feed valve that never sticks or binds—the only line that includes a feeder with the quick hook-up feature for small boilers—the most widely installed and thoroughly proved automatic water level controls on the market.

The New Number **37**



McDONNELL & MILLER
400 N. Michigan Ave., Chicago, Ill.

FOR SPRING MODERNIZING



Modern in design, efficient in service, yet priced to meet present day conditions, MUELLER Staple Line products are bringing to the wide-awake plumbing contractor a big share of Spring Modernizing sales.

Mueller Staple Line
H-1944

MUELLER CO.
Decatur, Illinois

Bronx Auxiliary Celebrates Its Birthday

February 16 marked the first birthday of the Bronx Women's Auxiliary. This event was celebrated by the members and their husbands with a party held at Rudi's & Maxl's Brau-Hause, 188th street and Grand concourse. Before going to the Brau-Hause, the regular meeting was held, with final arrangements being made for a card party to be held on March 3.

Mr. S. George Arnone, president of the Bronx Master Plumbers' Association, installed the officers for the coming year. It was fitting that Mr. Arnone should install the officers, as he officiated at the first meeting of the auxiliary when it organized in 1932. At the meeting a telegram was received from State President Mrs. Joseph O. Stapf, extending her good wishes on the first birthday of the auxiliary.

Rochester Auxiliary Reports Splendid Meetings

The Rochester, N. Y., Women's Auxiliary reports that there have been some splendid meetings this year, held at the various homes, with a few meetings uptown. The auxiliary is headed by Mrs. Benjamin Kewin, president; Mrs. Charles Gaenzler, vice president; Mrs. Herbert Heinzle, treasurer; Mrs. John Bliss, secretary, and Mrs. C. Arthur Bliss, publicity chairman. A meeting was held on February 8 at the home of Mrs. Joseph Paulus. Luncheon was served at one o'clock and was followed by the business meeting. Cards were played during the afternoon, with a prize awarded at each table.

Boston Auxiliary Holds "Foodless Food Sale"

The regular meeting of the Boston, Mass., Auxiliary was held recently at the home of Mrs. J. Preston Perham, president of the National Women's Auxiliary, in Boston. The meeting was called to order by Mrs. Arthur Russell, president of the Boston group, who used, for the first time, the gavel presented to Mrs. Perham during her recent trip through the West. A substantial sum was added to the treasury by a "Foodless food sale." Following the meeting the men joined the group for refreshments and a social hour.

Member of Tampa Auxiliary Is Honor Graduate

The Tampa, Florida, Auxiliary is proud to announce that Miss Margaret Williams graduated from the Hillsborough High School, Tampa, with great honors. Miss Williams, besides being one of the younger members of the Tampa Women's Auxiliary, is also the daughter of the past national corresponding secretary and now president of the Florida Division of the Women's Auxiliary to the Master Plumbers Association. Miss Williams graduated from Junior High in 1929 and received the Parent Teachers' Association award for scholarship and citizenship. She is one of seventeen members of her high school class to receive a national honor pin, her average being 92 plus. She is eighteen years old.

Cincinnati Auxiliary Installs Officers

Members of the Woman's Auxiliary of the Cincinnati Master Plumbers' Association held their business meeting and Valentine party at Lerman's Lunch Room February 14. The officers presiding during the year 1932 were all re-elected, with the exception of the vice president, who was unable to serve.

Following are the officers installed for the coming year: Mrs. Geo. Doench, president; Mrs. J. Hirth, vice president;

Mrs. Edward Frank, secretary; Mrs. Wm. Tillett, treasurer. After this delightful informal affair the ladies journeyed to the Albee Theatre, where they spent the rest of the afternoon. Miss Emma Niesen was in charge of the arrangements.

Detroit Auxiliary Installs Officers

The Detroit, Mich., Auxiliary started the new year in a most encouraging and cheerful spirit. The newly elected officers were installed by the state president, who used the new program which has been suggested by the national officers and is very effective and dignified. The new officers are Mrs. Laura Schonhofen, president; Mrs. Lola Brabyn, vice president; Mrs. Hazel Nawrot, recording secretary; Mrs. Maud Strachan, treasurer, and Mrs. Nellie Hughes, corresponding secretary. A very interesting meeting followed. The state president read some letters and gave some good advice. A few days later Mrs. John Green entertained the group at her home. About 20 sat down to a delicious lunch, after which bridge and other card games were enjoyed.

North and Northwest Auxiliary Discuss State Convention

The North and Northwest Auxiliary of Chicago met on January 25. Much of the time was spent discussing the events which took place at the state convention held on January 17, 18 and 19, and it was agreed that everyone enjoyed their visit to this three-day meeting. Also several business and social items were discussed. It was decided to lower the annual dues to $3.00 a year. Mrs. W. Blyth, president, appointed a nominating committee for the election of officers to take place at the next meeting. Plans were then discussed for an installation party to which the men are invited. Cards were played and a delicious lunch served.

South Side Auxiliary of Chicago Very Active

The January meeting of the South Side Auxiliary of Chicago was held at the Broadview Hotel with twenty-three members and three guests present. Following the regular order of business a delicious luncheon was enjoyed. A report of the card party given by Mrs. Myers was made and, while the attendance was not large, the afternoon was greatly enjoyed by those present. The election of officers for the new year will take place at the February meeting and President Mrs. Larson appointed a nominating committee consisting of Mesdames Hudon, Myers, Taffe and Delehant. The auxiliary was pleased to welcome Mrs. Waller as a new member.

Later a social hour at cards was enjoyed, with Mrs. Taffe and Mrs. Hildeman the lucky ladies at bridge, and Mrs. Hazard at 500. The hostesses for the afternoon were Mesdames Calnan, Gudlan, Jacobs and Parsons.

Mesdames Hildeman, Haig, Flavin and Klein acted as hostesses at the December meeting. Mrs. Hager was appointed chairman of the Women's Committee for the Illinois convention by State President Mrs. C. C. Rosenfield. Mrs Larson extended a vote of thanks to Mrs. Khym and Mrs. Flavin for the success of the card party which was held the previous month, the proceeds of which amounted to $13.25.

The usual contribution for charity was voted upon favorably and the officers authorized to take care of the matter.

Denver Auxiliary Has Busy Season

The Ladies Auxiliary to the Denver Master Plumbers Association met February 8 at the Denver Tea Room with Mrs. Carl Thurston, hostess. A delicious luncheon was

LIQUID SOAP FIXTURE

Latest design push-in type. Pressing of button delivers measured quantity of soap. At no position of button can soap run in steady stream. Nickel-Plated or Chromium finish. Send for catalog.

Imperial Brass Mfg. Co.
1231 West Harrison Street
Chicago, Illinois

BARBER GAS BURNERS

Create Satisfied Gas House Heating Customers

No GAS residence heating system is better than its Burner—and without an efficient burner—no heating plant stands the test.

Heating Contractors can develop a large and profitable business upon the sale and installation of Barber Automatic Conversion Burners. Our new liberal and attractive discounts, together with our sales helps will be sent immediately upon request. Write us without delay.

THE BARBER GAS BURNER CO.
3702-04 Superior Ave., Cleveland, Ohio

Look for the Arm-and-Hammer

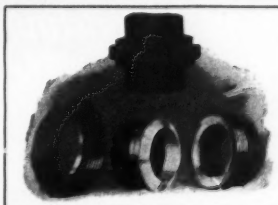
ARMSTRONG BROS.

Improved PIPE WRENCHES

Just grip this wrench and you will feel the difference. It seems a part of you. Takes a positive hold without wobble or rattle. It cannot be equalled for its features are patented. 10 major design improvements: No clumsy "frame." Nut can't fall out. Heavy forged-in lugs to take up side strain. Coil spring. Handle heaviest at point of strain. Replaceable tool steel jaws. Self-cleaning (ball and socket) action. No projections below line of handle. All-Steel.

Write for Circular

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 North Francisco Avenue
CHICAGO, U. S. A.



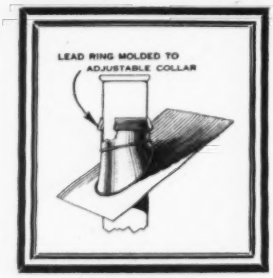
Dart Unions

Long Life!

DART Unions have saved thousands of dollars for users because they not only have eliminated unnecessary break-downs but also because they have been giving TWICE the ordinary service.

This is possible because of the *two bronze to bronze* seats which protect both sides of the joint from rust and corrosion.

E. M. DART MFG. CO., PROVIDENCE, R. I.
Sales Agents: The Fairbanks Co., New York Branches
Canadian Factory: Dart Union Co., Ltd., Toronto, Canada



HESSLER
Adjustable
ROOF FLANGE

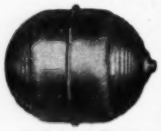
NO. 1 ¼ TO ½ PITCH
NO. 2 FLAT TO ¼ PITCH

1½ in. to 6 in.
Furnished in Galvanized or Copper

H. E. HESSLER CO., SYRACUSE, N. Y., U. S. A.

NO-SOL COPPER FLOATS

Quality Merchandise
DOES MOST TO STIMULATE
Consumer Confidence


4"x5" Oval Float

5" Round Float

Incorporated 1907
The AYLING & REICHERT CO.
3047 N. ERIE ST., TOLEDO, OHIO

DO YOU PAY FOR THE LOW CONSUMER PRICE? NOT WHEN YOU SELL AN

EMBY
Automatic Electric CELLAR DRAINER

Write for full information
Miner-Bradley Mfg. Co., Seekonk, Mass.

Make **PROFITS** *on Remodeling*

THE KAINER PRESSURE GOVERNOR

Accurate
Simple
Safe

Automatic Control for Hot Water Heating Systems

Write today for prices and Bulletin 32-B
A. S. M. E. Approved

KAINER & COMPANY CHICAGO
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served at one o'clock. A letter from the corresponding secretary of the national auxiliary was read. Cards were then played and honors went to Mrs. F. X. Kreidl and Mrs. H. H. Mellema.

A Valentine party was held at the home of Mr. and Mrs. J. P. Brickey on February 11. Hearts and dainty cupids adorned the rooms. Honors at cards were won by Mrs. Julia Hensler, Mrs. V. A. Kiser, Mrs. J. J. Laverty and Mr. F. X. Bordeau. Refreshments consisting of sandwiches, ice cream, coffee and cake were served by the committee.

On January 25 the ladies met at the Denver Tea Room. After a lovely luncheon the business session took place. In the absence of Mrs. H. H. Mellema, Mrs. Mary Bordeau acted for her.

Mrs. F. H. Samson entertained the group on January 11. Following the luncheon President Mrs. C. R. Cooper called the meeting to order. Whist was enjoyed later.

San Francisco Auxiliary Gives Banquet in Honor of Retiring President

The San Francisco, Calif., Women's Auxiliary met on February 2 at the Master Plumbers Hall with 15 in attendance. It was decided at the business session that a card party will be held every month for master plumbers, wives and friends. Cards were enjoyed after the meeting. Mrs. Balling, hostess, served coffee and cake.

On January 28, 32 members and husbands attended a banquet for the retiring president, Mrs. Balling. Mrs. Sand, Mrs. Ravani and Mrs. Koenig made up the committee in charge. The table was decorated with blue and gold. Nut cups and place cards with blue and gold added the finishing touches. Mrs. Balling was presented with a lovely floor lamp by Mrs. Ravani, the new president. Later cards and dancing were enjoyed. Messrs. McLeod, Ravani, LaChapelle, Trezise and Mesdames Sand, Goss and Koenig carried off the honors at cards. Mr. Peterson and Mrs. LaChapelle won the boobies and Mrs. Tabacco the consolation prize.

Alameda County Auxilary Has Colorful Installation Party

The year's activity of the Alameda County (Calif.) Auxiliary is traditionally ushered in with festivities honoring the new officers. This year's event took place recently at the Lake Merritt Hotel, Oakland. The dining room, which commands a beautiful view of the lake, was decorated for the occasion with spring flowers. Music added to the gaiety, while upward of twenty ladies were seated about the luncheon table. Following the formal installation the ladies spent the afternoon at whist, when Mrs. W. H. Picard captured first honors, Mrs. W. Herbert Graham second prize, and Mrs. Robert Duncan, Jr., was awarded the consolation trophy. Due to illness, Retiring President Mrs. W. D. J. Evans was detained at home. The new officers are: Mrs. L. J. Jackson, president; Mrs. W. F. Mauzy of Walnut Creek, vice president; Mrs. J. Rankin, secretary; Mrs. Harry Le Gassick, treasurer, and Mrs. James Rankin, marshal. Upon assuming her new duties Mrs. Jackson announced that a vigorous campaign will be launched for new members during 1933.

Death of Mrs. William Nies

Mrs. William Nies, wife of William Nies, of Los Angeles, Calif., president of the Southern California Federation of Merchant Plumbers, died recently at her home in that city.

PIPE LINES CONNECTED BY L·Y·T

"LOVELY, LOVELY!"

"Oh, we had the loveliest arrangement at our church society last week. Every woman contributed five dollars, which she had earned herself by hard work."

"How did you get yours?"

"From my husband."

"I wouldn't call that hard work."

"You don't know my husband."

HE WAS SURE OF IT

Donald, aged five, had been playing all morning in the park. At lunch time he came home with a new golf ball, which, he said, he had found. His father looked at him sternly for a minute, and then said:

"Are you sure it was lost?"

"Oh, yes, dad," said the boy confidently. "I saw the man and his caddie looking for it."

"Eldoradogram."

He: "I'm groping for words."

She: "Well, you don't expect to find them around my neck, do you?"

A man in a hospital for mental cases sat fishing over a flower bed. A visitor approached, and, wishing to be affable, remarked:

"How many have you caught?"

"You're the ninth," was the reply.

DUMB DORA AGAIN

Magistrate: "Miss, have you appeared as a witness in a suit before?"

Dumb Dora: "Yes, sir."

Magistrate: "What suit?"

Dumb Dora: "My blue voile."

"It's Said and Done."

A DISPUTED CLAIM

A proud young father wired the news of his happiness to his brother in these words:

"A handsome boy has come to my house and claims to be your nephew. We are doing our best to give him a welcome."

The brother, however, failed to see the point, and wired back: "I have no nephew. The young man is an impostor."

"Kablegram."

"I left my money at home," said the lady to the conductor, "but you'll have to trust me, for I am one of the director's wives."

"Lady," said the conductor, "I couldn't trust you if you were the director's only wife."

—Laughing Gas."

THAT AND A LOT MORE

An Englishman was visiting George Washington's home at Mount Vernon. Glancing at the hedge, he remarked, "Ah, I see George got his hedge from dear old England."

"I'll say he did!" blurted out his American companion. "He got this whole country from dear old England."

Christian Observer.

TOO FAR AWAY

Professor: "Why don't you answer me?"

Freshman: "I did, Professor; I shook my head."

Professor: "But you don't expect me to hear it rattle away up here, do you?" American Boy.

OPTIMISTIC CAMERA

A camera man, working for the educational department of a film company, met an old farmer in town and said:

"I have just been taking some moving pictures of life out on your farm."

"Did you catch any of my men in motion?" asked the old man curiously.

"Yes, I did."

The farmer shook his head reflectively, and then he said: "Science is a wonderful thing." "Just Friendly Chats."

Neither storm nor war lasts forever. L. Y. T.

LORD BALTIMORE HOTEL

AS MODERN AS TOMORROW

Truly one of America's finest hostelries with every refinement of the sumptuous hotel. And a price range that is definitely modest.

RADIO IN EVERY ROOM

700 ROOMS EACH WITH BATH

$3 UP

WALTER L. JACKSON
Managing Director

All Garage Facilities

BALTIMORE MARYLAND

A Choice of the Best

That's what you get in replies from a DOMESTIC ENGINEERING Classified Advertisement.

No matter what your problem—if you want a job, or a man for a job, if you have some used equipment to sell or want to buy some, if you want to know what the leading books on plumbing and heating are, if you want bids on a job—a DOMESTIC ENGINEERING Classified Advertisement will solve that problem.

Domestic Engineering
1900 Prairie Avenue, Chicago, Illinois

Two can live almost as cheaply as one...

$1 a day more for two persons at Hotel Lexington. For instance, rooms at the minimum rate of $3 a day for one person, are only $4 a day for two.

And the Lexington is a new hotel, located in the Grand Central Zone, one block from fashionable Park Avenue.

HOTEL LEXINGTON

In Grand Central Zone, Lexington Ave. at 48th St.
NEW YORK CITY
CHARLES E. ROCHESTER, *General Manager*

The MIAMI HOTEL

Dayton's Leading Hotel
400 ROOMS-400 BATHS
Ideal location-Modern and fireproof-Large airy rooms and circulating ice water
$2.50 UP
For Delicious Food
THE TEA ROOM
AND MAIN DINING ROOM
SYLVESTER BEER, Managing Director

DAYTON, O.

CHICAGO BOOKING OFFICE
520 No. Michigan Ave. Phone Superior 4416

SENTENCES THAT SELL

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

There are no folks so full of business as those who have nothing to do.

* * *

He that will eat the kernel must crack the nut.

* * *

No matter how early you rise, the day does not dawn sooner.

* * *

He who waits for a dead man's shoes may go barefoot a long while.

* * *

It matters less to a man where he is born than how he can live.

* * *

More have repented speech than silence.

* * *

Neither wise men nor fools can work without tools.

* * *

Speaking without thinking is shooting without aim.

* * *

If one knows, it is a secret; if two, it is public.

* * *

The glory of wealth and beauty is transient and slender.

* * *

He is rich who has all he desires.

* * *

Often a great man comes forth from a humble cottage.

* * *

Honesty gives wings to strength.

* * *

A blind man is not a judge of color.

* * *

The highest towers fall with the heaviest crash.

* * *

Speak well of your friend, and say nothing about your enemy.

* * *

The best work in the world is done on the quiet.

* * *

A mob may have many heads, but it seldom has brains.

* * *

The longer we live, the more strange sights we see.

* * *

There is a remedy for everything, if men could find it.

* * *

Happy is he who forgets what cannot be altered.

* * *

When the sun is highest, it casts the least shadow.

* * *

If you would know the value of money, try to borrow it.

* * *

Whether the pitcher strikes the stone, or the stone the pitcher, it is bad for the pitcher.

* * *

Be what you are, and desire to be what you are able to be.

* * *

We live more by example than by reason.

* * *

Life is half spent before we know what it is.

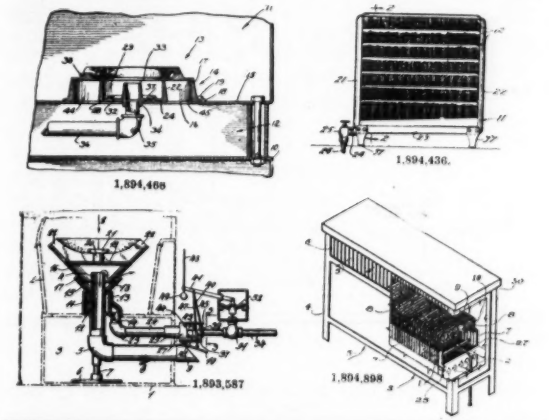
NEW IDEAS FROM PATENT OFFICE

Heating Department

1,894,466. Oil burner. Thomas W. Hunter, Alhambra, Calif.

1,894,436. Radiator. Nels Asp, Chicago, Ill.

1,893,587. Gas Burner. Gaston Brown Killam, Denver, Colo., assignor to Killam Gas Burner Company, Denver, Colo., a Corporation of Colorado.



1,894,898. Humidifier. Reuben N. Trane, La Crosse, Wis.

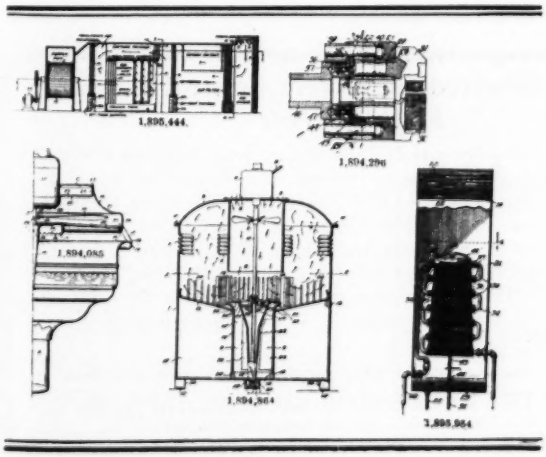
1,895,444. Heating, Ventilating, and Air Conditioning. William L. Cassell, Kansas City, Mo., assignor to American Blower Corporation, Detroit, Mich., a Corporation of Delaware.

1,894,296. Die Head. Harry T. Shearer and Charles A. Reimschissel, Waynesboro, Pa., assignors to Landis Machine Company, Waynesboro, Pa., a Corporation of Pennsylvania.

1,894,085. Air Conditioning and Circulating Device. Arthur W. Conley, Shaker Heights, Ohio.

1,894,864. Air Humidifier and Washer. Hugh M. Hall, Eaton Rapids, Mich., assignor of one-half to Charles L. Sprinkle, Lansing, Mich.

1,895,954. Air Conditioning Apparatus. Frederick H. Wilde, Chicago, Ill., assignor to Guy S. Faber.

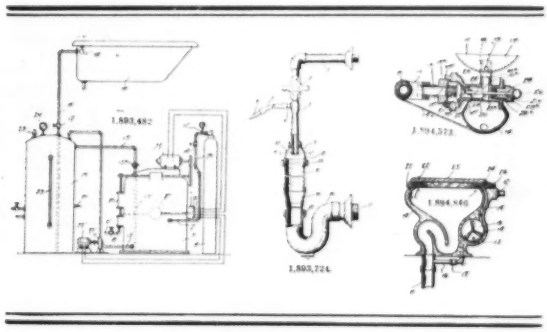


Plumbing Department

1,893,482. Bath Apparatus. Joseph S. Belt, Amarillo, Tex.

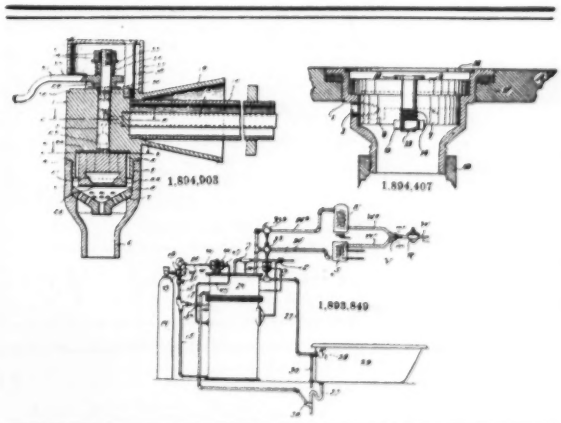
1,893,724. Aspirator. Roy H. Zinkil, Chicago, and Louis B. Stine, Niles Center, Ill., assignors to Crane Co., Chicago, Ill., a Corporation of Illinois.

1,894,573. Drinking Fountain. Thomas J. Sexton, Henryetta, Okla.



1,894,846. Toilet Bowl. James H. Bennett, Detroit, Mich., assignor of one-half to Edward Donovan, Detroit, Mich.; Mary J. B. Pennoyed administratrix of said James H. Bennett, deceased.

1,894,903. Mixing Faucet. James F. Dawson, Galveston, Tex., assignor to Triple "XXX" Company, a Corporation of Texas.



1,894,407. Valve Fitting for Plumbing Fixtures. Bernard Lutsky, Brooklyn, N. Y.

1,893,849. Bath Apparatus. Edward G. Sullivan, Amarillo, Tex., assignor to Joseph S. Belt, Amarillo, Tex.

1,844,995. Flush Tank for Water Closet Systems. Joseph A. Vogel, Wilmington, Del., assignor to Joseph A. Vogel Company, Wilmington, Del., a corporation of Delaware.

1,860,927. Water Softener. Charles P. Eisenhauer, Dayton, Ohio, assignor to The Duro Company, Dayton, Ohio, a Corporation of Ohio.

THE "MODERN" RANGE BOILER

30 and 40 Gallons
200, 250 and 300 lb. Test

In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.

YOU CAN DO THE JOB BETTER WITH YAGER'S SOLDERING SALTS!

WE know this to be true, and we are so sure of it that we are offering a can for your approval, without cost—just so you can see for yourself what Yager's can do for you. Try it at our expense and you will not be without it. See page 638 Domestic Engineering Plumbing and Heating Catalog.

ALEX R. BENSON CO., INC., HUDSON, N. Y.
For list of distributors see 1933 McRae Blue Book
Sales Agents in Canada: Canadian General Electric Co., Montreal and Toronto

HOTEL LENOX

New Low Rates

for the finest, most comfortable accommodations in town. Excellent food. Convenient location. 3 minutes from Peace Bridge to Canada. 20 miles from Niagara Falls.

Free—Official AAA Road Map and Booklet. Write

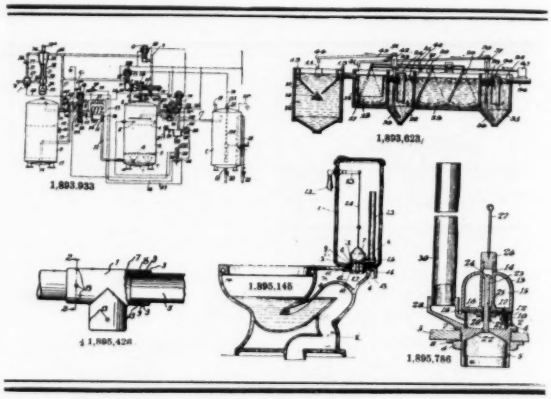
CLARENCE A. MINER, PRES.
140 North St., near Delaware

BUFFALO, N. Y.

1,893,933. Water Softening Apparatus. Andrew J. Dotterweich, Pittsburgh, Pa., assignor to Automatic Water Softener Company, Pittsburgh, Pa., a Corporation of Delaware.

1,893,623. Sewage Purification. Karl Imhoff, Essen, Germany.

1,895,426. Pipe Coupling. Leon M. Young, Samuel Eusey, and David E. Lindquist, Port Huron, Mich., assignors to Mueller Brass Co., Port Huron, Mich., a Corporation of Michigan.



1,895,145. Tank and Bowl Connection. Frank G. Brotz, Kohler, Wis.

1,895,786. Flush Valve. Arthur T. Cobb, Exeter, N. H., assignor to Exeter Brass Works, Exeter, N. H., a Corporation of New Hampshire.

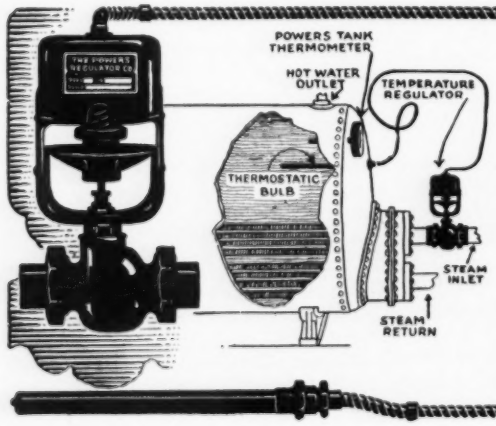
Move to New Locations

Portland, Ore.—W. G. Anstey has moved his plumbing and heating business from 228 Washington street to 124 Second street.

San Francisco, Calif.—David Campbell has moved his plumbing and heating business from 6270 Mission street to 16 Mission circle.

San Francisco, Calif.—A. J. McDonald has moved his plumbing and heating business from 3049 Twenty-fourth street to 3044 Twenty-fourth street.

Seattle, Wash.—Eckart Bros., Inc., have moved their plumbing and heating business from 419 Eighth avenue, N., to 2018 Third avenue.



$135. Invested in Powers Control Saves $1,145. a Year

Metered steam records of Aldis & Co., who own and operate many buildings in Chicago, showed a reduction of 154,000 pounds of steam a month with Powers Temperature Control on hot water heaters in their Champlain Building.

Besides preventing steam wasted by OVER-heated water, complaints about hot water were practically eliminated.

As Powers Tank Regulators usually give 10 to 15 years of Dependable Control, the profit on a $100 investment is often more than $10,000.

Phone or write our nearest office for prices or engineering data

THE POWERS REGULATOR CO. Chicago: 2716 Greenview Ave. New York: 231 East 46th St.
Offices in 43 Cities — See your telephone directory

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion.

CLASSIFIED ADVERTISING

One inch $4.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

Representatives Wanted

RADIATOR SALES OPPORTUNITY

Long established, well rated manufacturer is now in production on a new type of heating radiator which authorities claim to be the most attractive and highly developed radiator yet produced.

Applications for sales rights in various territories are now being received. Substantial immediate profits and a promising future are available to those selected.

Properly qualified sales representatives who can operate upon a straight commission basis should write for particulars. State experience, connections and sales records. Address P. O. Box 1222, Pittsburgh, Pa.

MANUFACTURERS' REPRESENTATives on commission basis to represent prominent and complete line manufacturer of sanitary pottery. Territories available: Iowa, Pittsburgh, including western Pennsylvania and West Virginia; also Kansas City and surrounding territory. Attractive opportunity for producers. Give full details when replying. Address Key 839, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

MANUFACTURERS' REPRESENTATives: A well known manufacturer of competitive priced cast plumbers' brass desires connections in territories surrounding the following cities: St. Paul, Omaha, Kansas City, St. Louis, Dallas, Memphis, Atlanta, Charleston. Commission only. Name lines representing and territory covered. Address Key 835, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

REPRESENTATIVES WANTED: Manufacturers' representatives now operating and having established clientele write us if you are interested in selling a line of centrifugal pumps of high quality, design and unusual characteristics at competitive prices. Territory available in all cities east of the Mississippi. Address Key 832, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

REPRESENTATIVE WANTED: Prominent manufacturer of plumbing and heating materials wants representatives to sell jobbing trade on commission basis in the following territories: Minnesota, Nebraska, Illinois, Georgia, Kentucky, Tennessee, Virginia, Colorado. Only men with proven records need apply. Address Key 838, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

Lines Wanted

MANUFACTURERS' REPRESENTAtive, New York Metropolitan, calling on plumbing supply houses and jobbers, wishes a few additional lines. Address Key 834, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

HIGH TYPE MANUFACTURERS' REPRESENTATIVE

covering jobbers in metropolitan area, Long Island and New Jersey, will consider a few additional lines for manufacturers in this territory. Address Key 833, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

Lines to Handle

MANUFACTURERS' AGENTS, JOBbers and dealers should write us at once for our new water heater prices and sales plan. Address Koil-Les Heater Company, Geneva, Illinois.

COMPLETE LINE OF PIPE FITTINGS is available to established sales representatives calling on plumbing and heating contractors. Address Key 836, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

Situations Wanted

SITUATION WANTED: MANAGER OR Foreman. Can take full charge of shop. Plumbing, heating and sheet metal work. Will go anywhere. 25 years' experience in handling mechanics and laborers. Address Chas. R. Friis, 84 Hillside Avenue, Midland Park, N. J.

SALESMAN: YOUNG MAN, AGGRESsive, excellent appearance, educated. Experience and acquaintance among architects, engineers, wholesalers and plumbers in New York City and vicinity. Wishes to represent manufacturer solely or will consider a side line, commission or salary. Address Key 827, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

Use this page to get what you want

If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on this page will put you in touch with the people you desire to reach.

The cost of insertion is only eight cents a word and may mean many dollars to you.

SALES ENGINEER: FIFTEEN YEARS contacting architects, engineers, Builders, School Boards, Jobbers and trade, Nationally for Manufacturers of Plumbing, Heating, Steel Boilers, Power Plant Equipment. Automatic Temperature Regulation. Wide experience building sales and dealer organizations. Desire change. Would consider any location for outstanding concern. Address Key 830, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

SITUATION WANTED: MANAGER OF wholesale plumbing, heating and sheet metal supply business, capable of taking full charge. Address Key 837, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

For Sale

OLD ESTABLISHED HEATING AND Sprinkler Contracting Business in Colorado for sale. For particulars address Key 831, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

FOR SALE

Seven Landis and Saunders pipe threading machines covering equipment to cut and thread pipe in complete range of sizes to 12".

2 Power Pipe Cutting Machines; 1 Lathe; 1 Drill Press.

Complete With Motors All in First Class Condition

Dimock and Fink's Large Pipe Shop

Come or Write at once for full description and prices. Will sell separate machines A bargain.

D. & F. CO., Inc.

Phone Harlem 7-0276

220 East 125th St., New York City

Miscellaneous

COLLECT THOSE OVERDUE BILLS

Our Collection Envelopes Will Do The Trick

Something New, Effective, Economical. Will not offend your customers—no bluffs nor threats. Send for sample, or $2.50 for 100; $3.50 for 200, with your name and address on each envelope. Send your business card or letter head with order.

LOUIS FINK & SONS CO., Printers

Estab. 1896 School Bldg. Laurel Springs, N. J.

AUDEL'S PLUMBERS' GUIDE

The standard educator; teaches the theory and practice of plumbing, heating, steamfitting, gasfitting and sheet metal work. Answers your questions. Explains the new short cuts, modern methods and inside trade information. Easy to understand. A complete reference and home study course. Fully illustrated, authentic, up-to-date, with plumbers code. Four volumes, pocket size; price $6 complete, payable $1 a month. Write today for FREE Plumbers Folder. THEO. AUDEL & CO., 65 W. 23rd St., New York.

PLUMBERS' BIN LABELS

Send for free booklets for plumbers: "How to Label Plumbers Stock Bins"; "Training the Store Room Apprentice to Know His Goods"; "How to Tag Stop Valves"; "How to Lay Out the Plumbing and Heating Shop"; samples of Plumbers Bin Labels; metal card holders; celluloid protectors.

HADDON BIN LABEL CO.,
HADDON HEIGHTS, N. J.

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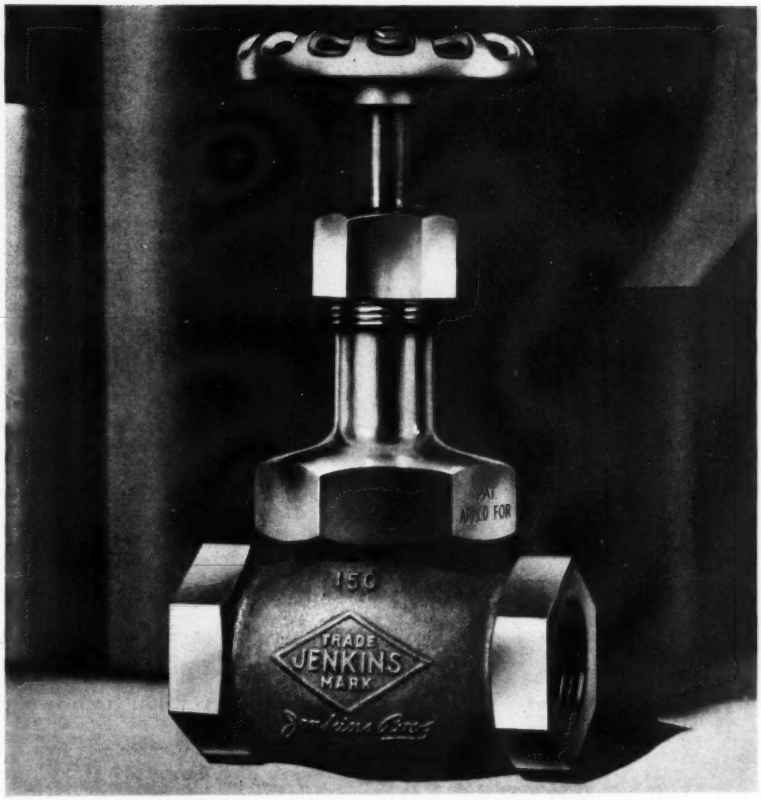

Fig. 106-A Jenkins Standard Bronze Globe, Valve, Screwed. For 150 lbs. steam and 250 lbs. oil, water, gas, working pressure.

PROTECTING

your reputation for good workmanship

In times like these, when the workmanship on every job is scrutinized more closely than ever, it is a shrewd policy to use only the best materials and equipment. You can't afford to gamble your reputation on an inferior product.

By giving genuine Jenkins trouble-free performance from the day they are installed, Jenkins Valves contribute to the owner's satisfaction and so help in building good will for you. There is no need to come back for bothersome readjustments after the original installation is once completed. Both the annoyance and expense of such servicing are avoided. You and your men can devote all your effort to the job that is ahead.

Also Jenkins clean cut threads make possible a clean cut pipe connection that enhances the appearance of any installation. Stripped threads, delays in fitting, and the like are avoided. The use of Jenkins Valves definitely strengthens your reputation for good workmanship.

Jenkins Valves are obtainable at your supply house.

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80 White St., New York, N. Y.; 510 Main St., Bridgeport, Conn.; 524 Atlantic Avenue, Boston, Mass.; 133 No. Seventh St., Philadelphia, Pa.; 646 Washington Blvd., Chicago, Ill.; JENKINS BROS., Limited, Montreal, Canada; London, Eng.

Jenkins

BRONZE IRON STEEL

VALVES

Since 1864

JENKINS VALVES ARE ALWAYS MARKED WITH THE "DIAMOND"

DO YOU KNOW?

THAT THERE WERE ONLY TWO NEW CONSTRUCTION JOBS PER HEATING CONTRACTOR IN 1932!

THERE were only 60,000 new buildings erected in 1932!

This is an average of just TWO New Construction jobs for each of the 30,000 Heating Contractors in this country.

If you got your two, you're lucky. Most Heating contractors didn't. They waited for their share of new construction. They hoped building would improve. But they waited and hoped in vain.

WOULD YOU BE SATISFIED WITH 3 JOBS A YEAR?

Now let's face the facts! There were only 100,000 buildings constructed in 1931, according to the F. W. Dodge Corporation. So, whether you expect 1933 to be as good as 1931 or 1932 makes little difference when the amount of new building is reduced to sales possibilities for you. Even with the prospects of 100,000 new buildings in 1933, you will have an average of only a little more than THREE new jobs for an entire year.

YOUR MARKET IS BUILDINGS— NOT BUILDING

But it is not important to you whether there are 60,000 or 100,000 new buildings in 1933, if you are really interested in making money. You can't do anything about improving building — but you CAN make money improving existing BUILDINGS. And as long as there are 16 million homes in this country without modern radiator heating, there is an opportunity RIGHT NOW to make real profits in Modernization in 1933. Hundreds, perhaps thousands, of these homes are right in your own territory. Some of the owners pass your place of business every day. Some of them may have asked you for estimates a year or more ago and have done nothing about installing modern heating. All of them are overlooking opportunities to buy radiator heating at prices they may never again see so low.

MODERNIZING IS ECONOMIZING!

What an opportunity for you! Stop waiting and hoping—start selling and installing. No investment these owners can make will return greater dividends in actual savings, added comfort and increased property values than modern heating. And you've got it to sell now at the lowest prices in 17 years. To make money this year, write today for our plan to help you make new profits from old property. Don't delay another day! A postcard addressed to the Sales Promotion Division will bring you full particulars.

AMERICAN RADIATOR COMPANY
40 West 40th Street • New York, N. Y.
Division of
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION